TECHNOLOGY DEPT.

TELEPHONE and Management ENGINEER

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JANUARY
1955

V.59 no.1

THE NATIONAL TELEPHONE MAGAZINE

Featuring in This Issue—

- ★ EXTRAS PAY OFF IN EMPLOYE SELECTION, *by E. W. Fair*
- ★ CONSTRUCTION OF LOCAL LINE PLANT IN ENGLAND, *by R. G. Tungate*
- ★ DESIGNING MODERN COMMUNICATION LINES, *by J. N. Petrie*
- ★ SMALL PLANT HEALTH AND MEDICAL PROGRAMS
- ★ NEWSLETTER ★ QUESTIONS & ANSWERS ★ NEW PRODUCTS

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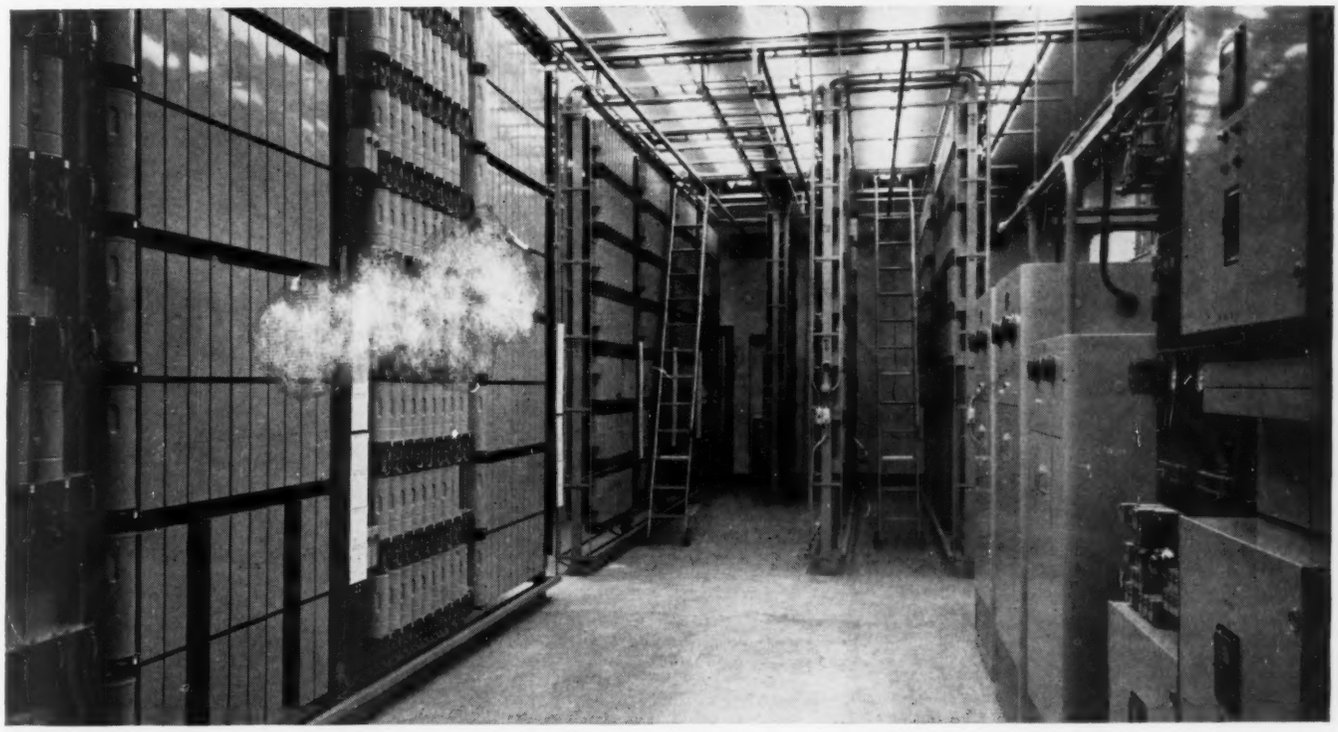
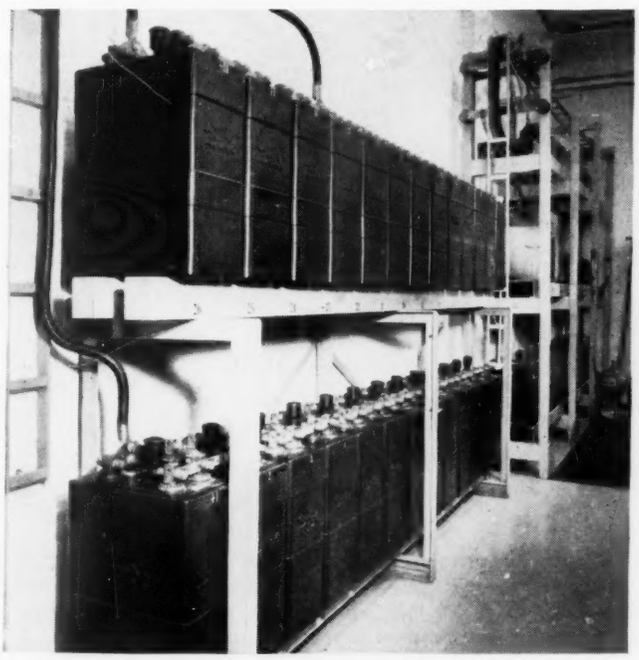
. . . with dependable Exide telephone batteries!



THIS MODERN dial equipment installation was manufactured by the Automatic Electric Company for the Del Rio, Texas, exchange of the General Telephone Company of the Southwest. Exide telephone batteries were specified for the power plant. You will find that Exides are your *best buy in telephone batteries* with low costs for maintenance and depreciation. They are dependable, powerful and long lived.



DEPENDABLE standby power is provided by twenty-six FB-15D Exide batteries in monobloc rubber containers. Batteries are rated at 840 ampere hours, and are used for automatic full-float operation. Exide also makes Exide-Manchex and Exide-Tytex batteries, in sealed glass or plastic containers for every type of telephone service. Call your Exide sales engineer, write for details.

DEL RIO'S central office was converted to dial operation last year, and serves over 3,800 stations.

Your best battery buy...
FOR ALL TELEPHONE SERVICES Exide® **BATTERIES**

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Simple as

Handle heavy reels easily and safely; remove wire or cable from top or bottom, front or back of reel with

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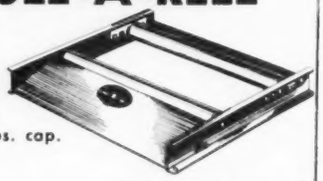

Style A:
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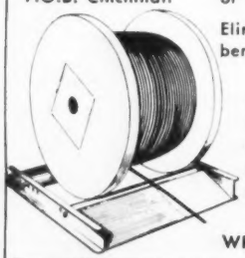

Eliminate jacks, cumbersome handling.

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TELEPHONE and Management ENGINEER

A Telephone Engineer Publication

JANUARY 1955
Vol. 59 No. 1

The Monthly Telephone Magazine

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FRONT COVER

New officers of Florida Telephone Association are congratulating each other after election during the group's convention. Left to right are CARL D. BROREIN, first vice president, Tampa; J. N. JOHNSON, president, Fort Myers; MISS JOSEPHINE POPPLETON, secretary-treasurer, Tampa; and MITCHELL DREW, second vice president, Quincy. (For complete story see Page 62.)

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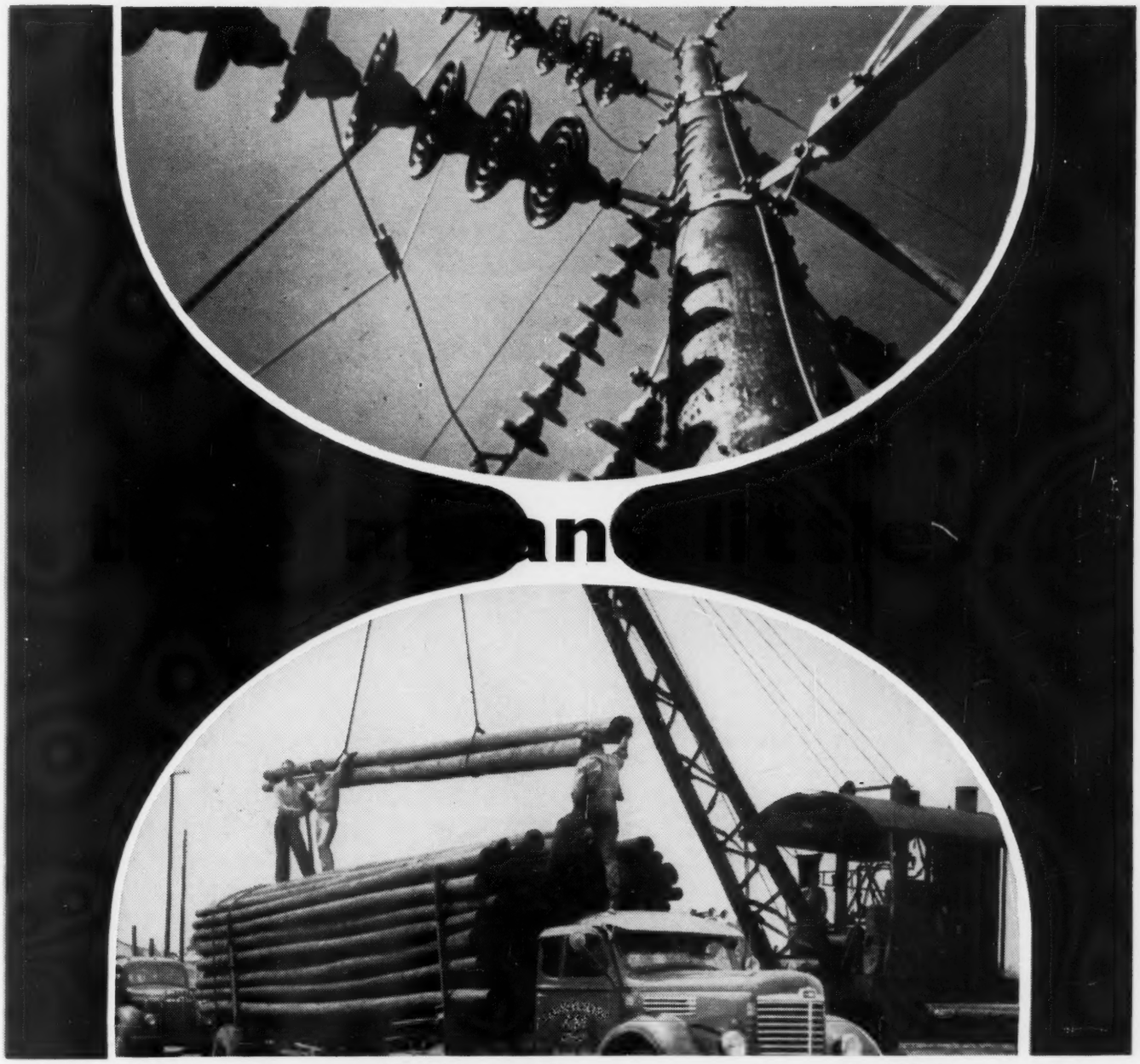

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With the use of Republic Creosoted Wood, the factor of time means little. The continuous performance of Republic Creosoted Wood — whether as poles for telephone or power lines, or as railroad ties, cross arms, anchor logs, wood blocks, piles, or lumber — is evidence of the dependability of these products. Resistant to insects and fungi, in acid or alkaline soils, pressure creosoted wood products by Republic provide the opportunity for an economical investment.

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REPUBLIC CREOSOTING COMPANY

MERCHANTS BANK BUILDING · INDIANAPOLIS 4, INDIANA

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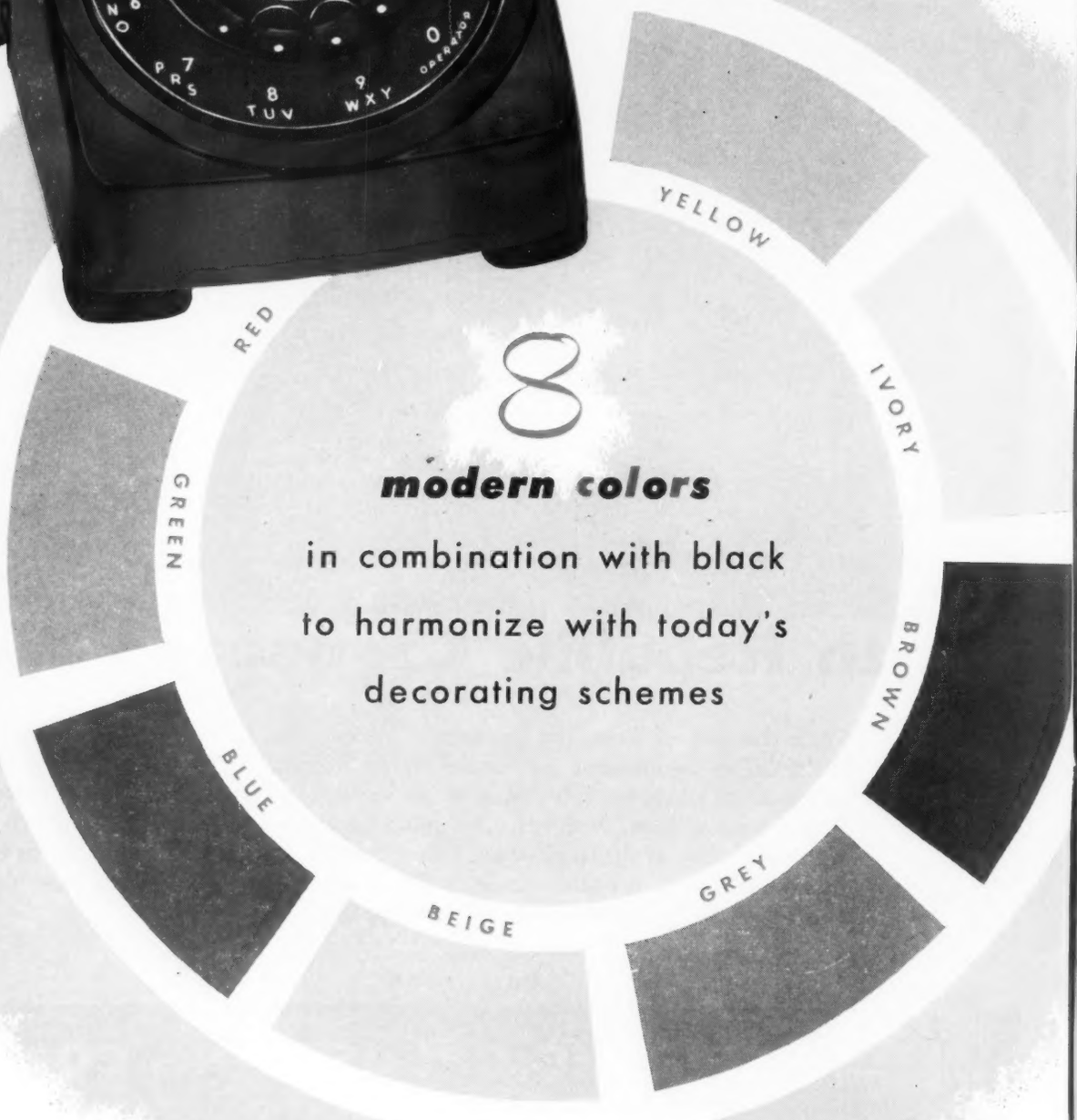

8 *modern colors*

in combination with black
to harmonize with today's
decorating schemes

KELLOGG
FIRST with CROSSBAR FOR INDEPENDENTS

...the famous KELLOGG K-500 Telephone

modern, decorator COLORS!

Here's good news for you...
and your "color-conscious" customers!

Kellogg has invaded the field of home decorating!

Yes, now you can offer your customers the famous K-500 telephone in eight two-tone colors in addition to the standard black phone. Fresh, modern shades of red, ivory, yellow, brown, grey, beige, blue and green, in combination with a sparkling black handset and dial. A symphony of colors that will match or contrast, and certainly complement, any decor.

This will be welcome news to your customers, for never before have they been so conscious of good design and smart coloring. They are demanding fashionable colors for their homes...from the smallest utensil to the most important furnishing...necessities as well as luxuries. And now *you* can bring color to their telephone!

Color will mean extra profit on every installation. Color will also sell more extension phones! And the good-will that will result from offering your customers something really new and exciting will be invaluable.

Make sure you ask your Kellogg representative to show you samples of the eight new colors. He'll also tell you about our recent "color-preference" survey that will aid you in ordering your colored K-500's.

Two-tone telephones to match or contrast any household decor...

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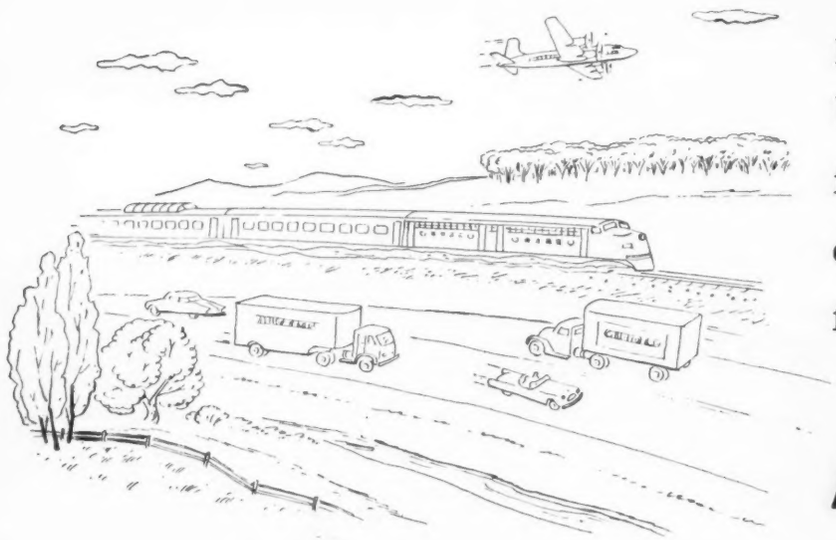
Your Nearest Kellogg Shipping Point is Never Far Away!



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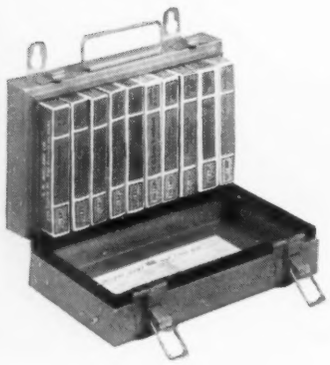
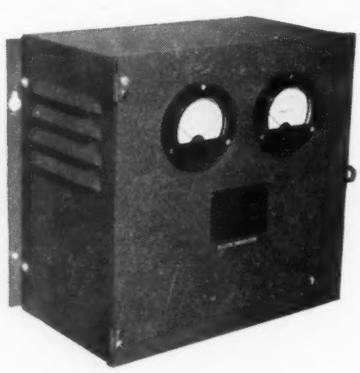
Sales Offices: 79 West Monroe Street, Chicago 3, Illinois

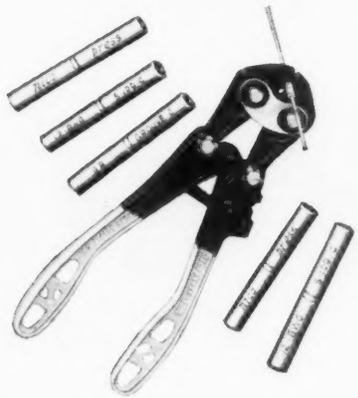
KELLOGG



First Aid Kit recommended for use by maintenance, operating crews of individuals. Each kit contains up-to-date approved directions - Each kit clearly marked. Weather-proof - dust-proof. E. D. BULLARD COMPANY.



First Choice of the Telephone Industry! The Raytheon RectiChargeR is fully automatic, maintains constant output voltage regardless of variation of load and line voltage. Never overcharged or undercharged, batteries last longer. RAYTHEON MFG. CO.



Simple, Quick and Sure! For splicing two wires of different sizes, there's nothing simpler than using Nicopress reducing sleeves and the Nicopress 31-DC tool. Splices are always tight and strong. Made by the NATIONAL TELEPHONE SUPPLY CO.

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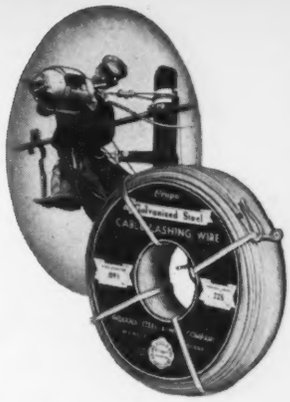
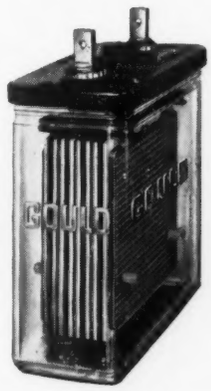
Cable Lashing Wire for use with modern Cable Spinners, Crapo Galvanized ("C" Coated) Lashing Wire available in .091" and .061" diameters. Wire also available in .045" and .065" diameters. Made by INDIANA STEEL & WIRE CO.

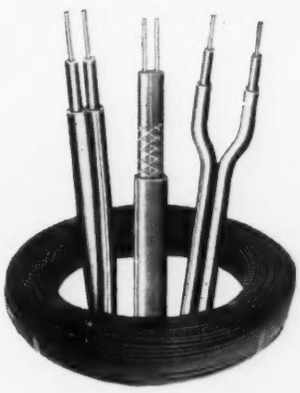


For Dependable Protection use RELIABLE ELECTRIC CO.'s No. 222 Outdoor Arrester with its self-cleaning sawtooth discharge blocks. Used with unprotected cable terminal where open or drop wire leads are too long to be left unprotected.

for Line Supplies



Outstanding Battery Performance is yours when you choose Gould Plante' Batteries. Thick, grooved, pure lead positive plates give many years of trouble-free service! Made by GOULD-NATIONAL BATTERIES, INC. the finest money can buy.



Long Service Life and Low Plant Costs go hand-in-hand with the installation of ENDURPRENE—The Neoprene Drop Wire available in both Copperweld and Bronze. Flexible and easy to handle. Made by GENERAL INSULATED WIRE WORKS, INC.

These Double-Faced Signs are made of long-life porcelain enamel fused to heavy gauge steel. Clear visibility and permanent colors are features of signs made by INGRAM-RICHARDSON MANUFACTURING CO. With either plain or activated surface.

MIKE THE MOLE SAYS:

Give the GUY a CHANCE

I get around... and I know that Chance Anchors really hold

YOU GET THE MOST FOR YOUR MONEY WITH CHANCE ANCHORS the most complete line

8-WAY EXPANDING
The guy load is distributed all around the anchor—no wasted space between blades. Usually installed in clay or loam.

NO-WRENCH SCREW
For hand or machine installation. Pitch-controlled blade goes down faster and adds to holding power in sandy soil, soft clay or loam.

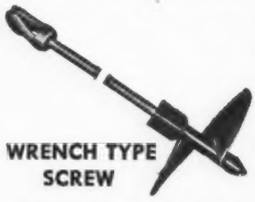
NEVER-CREEP
Made of structural steel. Pulls *entirely* against solid, undisturbed earth. For extra heavy loads in clay or loam.

CROSS-PLATE
For heavy-duty anchoring in machine-bored holes. Holds better than logs or slugs. Saves time and money.

SWAMP SCREW
For swamps, marshes, quicksand, river crossings or seasonally flooded areas. Screws down deeply by adding sections of pipe.

8-WAY CONE
Acts as inverted wedge. Flaring base and flat faces increase wedging action. Used in rocky areas with rock wedging.

EXPANDING ROCK
No grouting necessary. The greater the pull, the tighter it wedges against solid rock. Set in 2" drilled hole.



WRENCH TYPE SCREW
All steel—double arc welded. Anchor hub absorbs installation strain. For light loads in sandy soil, soft clay or loam.

POLE KEY ANCHOR
Keys poles at the butt to reinforce them against unbalanced loads in soft soil. Ideal for congested urban areas.

Both the soil type and condition are important factors in determining the type of installation and the kind of anchors to use. That's why Chance Anchors are made in so many types and sizes. The anchors shown above are made in a wide variety of sizes. Each type is designed for certain soil and guying conditions. Each of these anchors will do its specific job better than any other anchor you can choose.

Protect your investment in line construction. Analyze your soil and guying conditions, and specify the Chance Anchors that meet your particular requirements.

There is a CHANCE Anchor Distributor in your area who can probably fill your order directly from stock.

SPECIFY CHANCE FOR SERVICE!

A·B·CHANCE CO·

CENTRALIA, MISSOURI
SAN FRANCISCO, CALIFORNIA

ABC INDUSTRIES

CA54-28

Across The Editor's Desk

"Facts of Life"

THANKS TO *John Boylan,* chairman of the *Rochester (N. Y.) Telephone Co.,* for sending us a copy of the excellent editorial carried in the Rochester Democrat and Chronicle in the December 31 issue. Titled "Telephone and Taxes," the editorial explained to their readers the facts of life regarding a rate increase just granted to the Rochester company. It is seldom that the press takes the time to editorially inform its readers that an increase of utility rates invariably ends up with the company getting about half of the increase, the other going to taxes. We congratulate the Rochester Telephone folks for attending to their public relations and suggest that other Independents see that their Editors get the facts.

Winter Dream

AS WE WRITE these lines following the holidays we are peaking out the window at an overcast cold Illinois January day so we too are dreaming of sunshine and sandy beaches. The above paragraph on plans for April and the memory of greeting cards from a number of telephone people now visiting in the South has given us the itch to write Carl for the details for ourselves.

Jack White

MAYBE WE DID *Jack White* of *Lincoln, Nebr.,* an injustice in commenting in this column about so-called deans of traveling salesmen calling upon the telephone trade. Jack is right up there on top if we get our adding machine to working as he has been hitting the highways and byways for the *Leich Sales Corp.* since his retirement from the *Automatic Electric Company.* His customers tell us that Jack travels his territory consistently and is and always has been up to his neck in friends. Truly the latter words cause us to salute him as a wealthy man!

NEWSLETTER
TELEPHONE ENGINEER

Fortnightly TELEPHONE ENGINEER ★ TELEPHONE ENGINEER AND *Management*
ON THE 1st OF EACH MONTH ON THE 15th OF EACH MONTH

Dear Sir: Jan. 15, 1955

COURT REVERSES COMMISSION'S USE OF OWN SEPARATIONS FORMULA: – Action of Idaho Public Utilities Commission in using its own formula for separation of interstate & intrastate property & expenses of Mountain States Tel. & Tel. Co., rather than applying standard separations manual, has been reversed by Idaho Supreme Court in ruling on an appeal by company. Rates originally asked by company in May, 1952, & denied by commission, remain in effect under bond in accordance with injunction issued previously by a District Court. The commission has 20 days in which to ask rehearing.
Idaho's highest court also remanded to commission its findings disallowing working capital & using a hypothetical debt ratio of 45%. Court held that debt ratio of not higher than 40% should have been used.

EXPANSIONS & IMPROVEMENTS: – Prairieburg (Ia.) Tel. Co. completed $31,000 dial conversion project . . . General Tel. Co. of N.W. converted St. Maries, Idaho, exchange to dial. Project cost about $320,000 . . . Iowa Continental Tel. Co. will convert its Manson, Ia., exchange to dial . . . C. W. Chastain, mgr. Grand River Mutual Tel. Corp., Trenton, Mo., announced REA approval of company's $347,809 contract for central office equipment . . . Fidelity Tel. Co. will convert Owensville, Mo., exchange to dial in '55 . . . General Tel. Co. of Indiana has budgeted $4,000,000 for new construction in 1955 . . . West Kentucky Rural Tel. Co-op, Mayfield, Ky. awarded $649,285.90 construction contract to Alpha Construction Co., Tulsa, Okla. . . . Inman (La.) Tel. Exchange completed $100,000 dial conversion project . . . Ohio Consolidated Tel. Co. completed dial conversion at New Bremen, Ohio . . . Middle States Utilities Co. completed $100,000 dial conversion at Tabor, Ia. . . . Nebraska Central Tel. Co. completed dial cut-over at Arcadia, Neb. . . . Newburg (N.D.) Tel. Co. plans $4,375 line construction project . . . Grand River Mutual Tel. Corp., Princeton, Mo., signed $347,809 contract for central office equipment.

TIDEWATER COMPANY TO SPEND $1,000,000 ON IMPROVEMENTS: – Tidewater Tel. Co., serving about 11,000 subscribers in eastern Virginia, plans to spend about $1,000,000 this year on expansion & improvement of its system, company officials have told the Virginia Corporation Commission in hearings on the company's $185,000 annual rate increase request. Commission, after hearing the company's evidence, continued the case until Feb.

OWNERSHIP CHANGES: – Alhambro (Ill.) Mutual Tel. Co. has merged with Grandfork (Ill.) Mutual Tel. Co. . . . A & M Tel. Co., Ava, Mo., purchased Osage Valley Tel. Co. . . . Chariton Valley Tel. Corp., Macon, Mo., purchased exchanges at Bucklin & Ethel, Mo. . . . Citizens Tel. Co., Decatur, Ind., has negotiated an option to purchase stock of Argos (Ind.) Tel. Co. & Nappanee (Ind.) Tel. Co. . . . Southwestern Bell Tel. Co. will purchase Farley (Mo.) Tel. Exchange; Haslet (Tex.) Tel. Exchange; and Miami County Tel Co, Paola, Kans. ... S.W. Bell Tel. & Tel. purchased

and Miami County Tel. Co., Paola, Kans. . . . Southern Bell Tel. & Tel. Co. purchased telephone properties of the Bayshore (Fla.) Water & Light Co. . . . Paul Bunyan Rural Tel. Co-op will purchase Shotley (Minn.) Pioneer Tel. Co.; Warren (Minn.) Township Tel. System; North Battle (Minn.) Farmers' Tel. Co. . . . Plymouth (Ill.) Farmers' Swbd. Co. purchased lines of Birmingham (Ill.) Mutual Tel. Co. . . . Herman Loge, Frost, Minn., purchased Granada (Minn.) Tel. Exchange from Mrs. Frances Findley . . . Iowa Tel. & Tel. Co. sold its Cascade (Ia.) exchange to Cascade (Ia.) Tel. Co. . . . Northern Kansas Tel. Co., Effingham, Kans., is acquiring East Kansas Tel. Co., Nortonville; Corning (Kans.) Tel. Co.; Circleville (Kans.) Tel. Co.; Emmett (Kans.) Tel. Co.; & St. Mary's, Kans., exchange of S. W. Bell Tel. Co. Northern Kansas company has $1,170,000 REA loan. It will install 13 new dial offices.

RATE ADJUSTMENTS: – Chicago County Mutual Tel. Co., Center City, Minn. authorized to increase rates. New rates will boost net income from $125 to $2,751, 5% return on $55,061 rate base . . . Missouri Public Service Commission authorized Albany (Mo.) Tel. Co. to file new rate schedules. New ratss will boost revenues $4,000 for return of 6.44%.

NASHVILLE CHANCELLOR ORDERS HIGHER RATES FOR SOUTHERN CONTINENTAL: – Concluding that the $50,000 rate increase authorized by the Tennessee Railroad & Public Utilities Commission for Southern Continental Tel. Co. Cookeville, Tenn., would have resulted in confiscation of company's property if applied, Chancellor Thomas A. Shriver has remanded case to the commission with directions to allow rates producing at least $155,-657 annually in increased revenues.

Until commission has complied, court ruled that its earlier injunction authorizing Southern Continental to apply its proposed rate schedule will remain in effect.

Southern Continental was represented in case by Jared Maddux, Lieutenant Governor of Tennessee, Lon F. McFarland, & former US Senator Arthur E. Nelson, chief counsel of Gary Group telephone companies.

RATE INCREASE GRANTED ROCHESTER (.Y.) TEL. CO.: – Rochester (N.Y.) Tel. Corp. has been given approval by New York State Public Service Commission to increase monthly rates by 25 cents for residential telephones and $1 for business phones, effective Jan. 1. About 220,000 customers in eight counties are affected by the order.

Commenting on the order, Commissioner Glen R. Bedenkapp complimented the company for its ""healthy strides toward the complete regeneration of its plant and facilities. It would be little less than tragic, at this critical juncture in its forward progress, if the company were denied the means to attract, on reasonable terms, the large volume of additional capital it requires for the fulfillment of its ambitious program.''

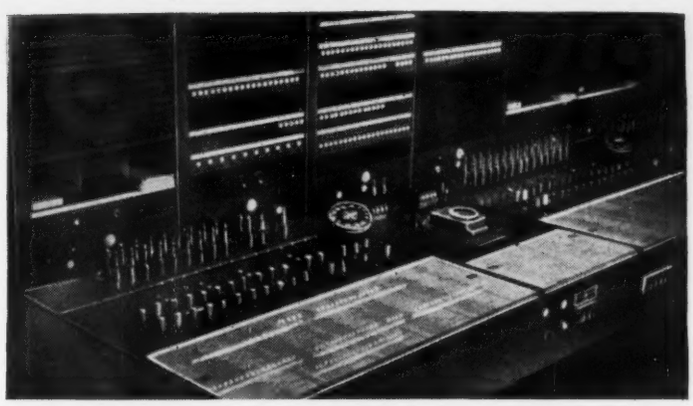
PEOPLE IN THE NEWS: – W. H. Ross named traffic mgr. of Carolina T. & T. Co's Rocky Mount-Henderson (N.C.) district . . . Leonard C. Young named chairman Montana Public Service Comission. He succeeds John E. Henry . . . J. E. Thompson named mgr. Fairfield, Ill. office of General Tel. of Ill. He succeeds W. A. Williams who transfers to Benton, Ill. . . . Gordon Howe named mgr. Ringsted (Ia.) Tel. Co. . . . R. F. Nielsen named mgr., Marcy Mutual Tel. Co., Ogden, Ia.

HELP: – We're working on story that will give data on Independent telephone industry's expansion-improvement project. Your cooperation in sending us information on your company's plans will be appreciated.

Ray Sonn

CALCULAGRAPH ACCURACY!

...works for you in important cost-saving ways



Photos courtesy of Automatic Electric

MODEL 33
FOR SWITCHBOARD
MOUNTING - OTHER
MODELS TO MEET EVERY
INSTALLATION NEED

AUTOMATICALLY FIGURES TOLL TIME! With Calculagraph on the job, there is no need for time-consuming, service-slowing manual figuring of elapsed time. Calculagraph does it all quicker, easier and, most important, with complete accuracy.

ACCURATE TO THE SECOND! Calculations are accurate down to the last second. Authoritative and indisputable, they make it possible to collect all the revenue due on every toll call — a basic advantage in exchanges large or small.

PERMANENT PRINTED RECORDS! Calculagraph prints elapsed time on permanent toll tickets which make accounting methods simpler, more efficient. Toll tickets are easy to read, remain legible permanently and are available for reference at any time.

COMPLETE INFORMATION ON AUTOMATIC TOLL TIME CALCULATING AND RECORDING IS CONTAINED IN THE CALCULAGRAPH FILE CATALOGS . . . WRITE TODAY.

CALCULAGRAPH COMPANY
HARRISON • NEW JERSEY

Please send copy of the new catalogs on automatic toll time calculating and recording.

NAME_____ TITLE_____

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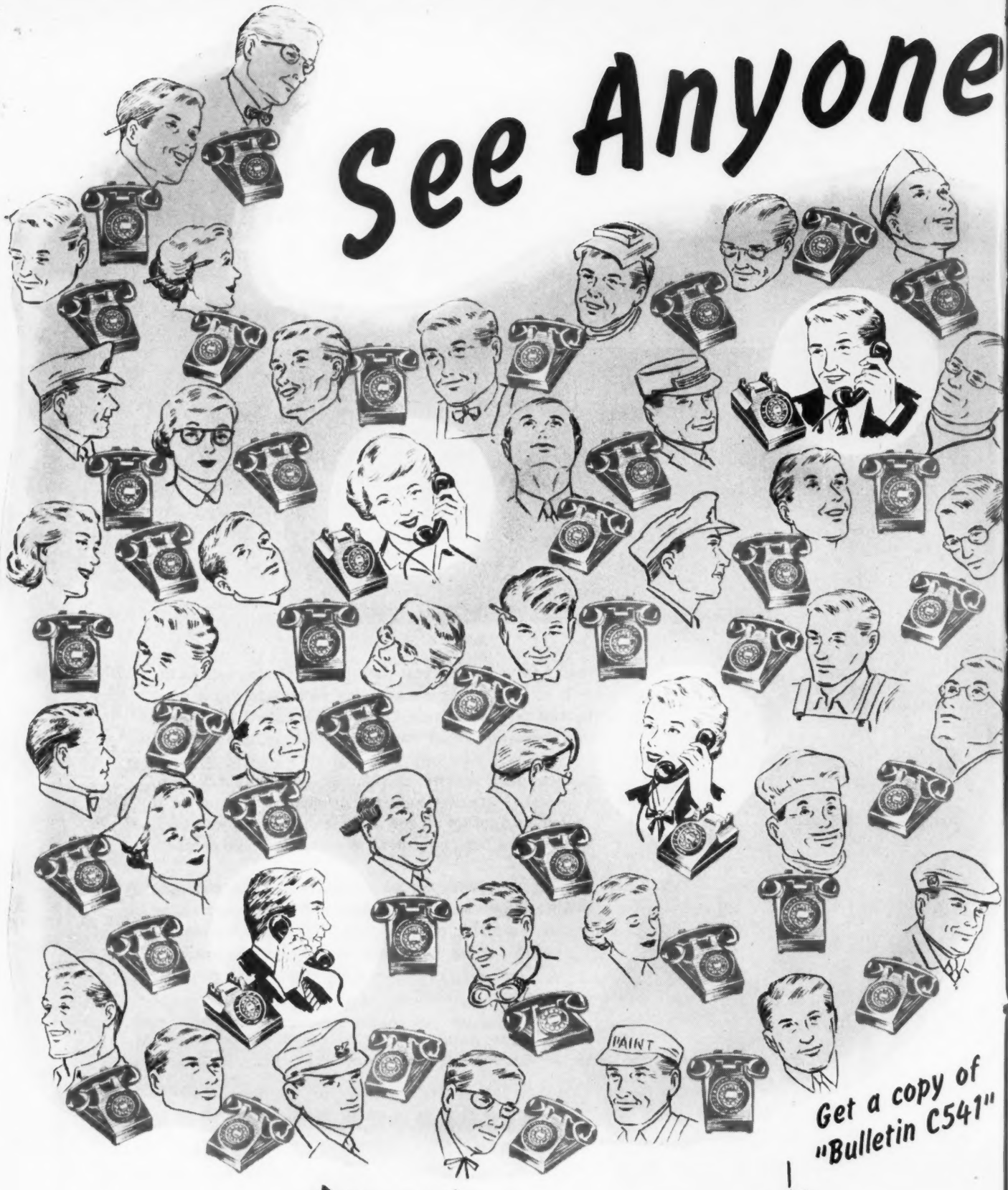
STREET_____

CITY_____ ZONE_____ STATE_____

THE STANDARD OF ACCURACY SINCE 1892



Get a copy of "Bulletin C541"

Available in Canada through ERICSSON TELEPHONE SALES of CANADA, Ltd. 1410 Stanley Street Montreal 3, P.Q.

*In other words, these five may talk simultaneously on North divided carrier, or each may have a private line with North bridged carrier; all on a single pair.

NORTH

e You Know?

*

These are the Subscribers You Could Serve ON A SINGLE-PAIR LEAD

How many people do you know who are waiting for telephone service from your company, but cannot be connected now because all leads are "Loaded"?

North Subscriber Carrier can help you meet just such a situation. Four channels applied to an existing physical lead make it possible for you to add *as many as forty* new subscribers* to the same pair without affecting those already on the line. The cost in most cases is less than the construction of open wire lines. The transmission quality is high. The installation is simple. All stations can be rung on a fully selective divided basis if desired.

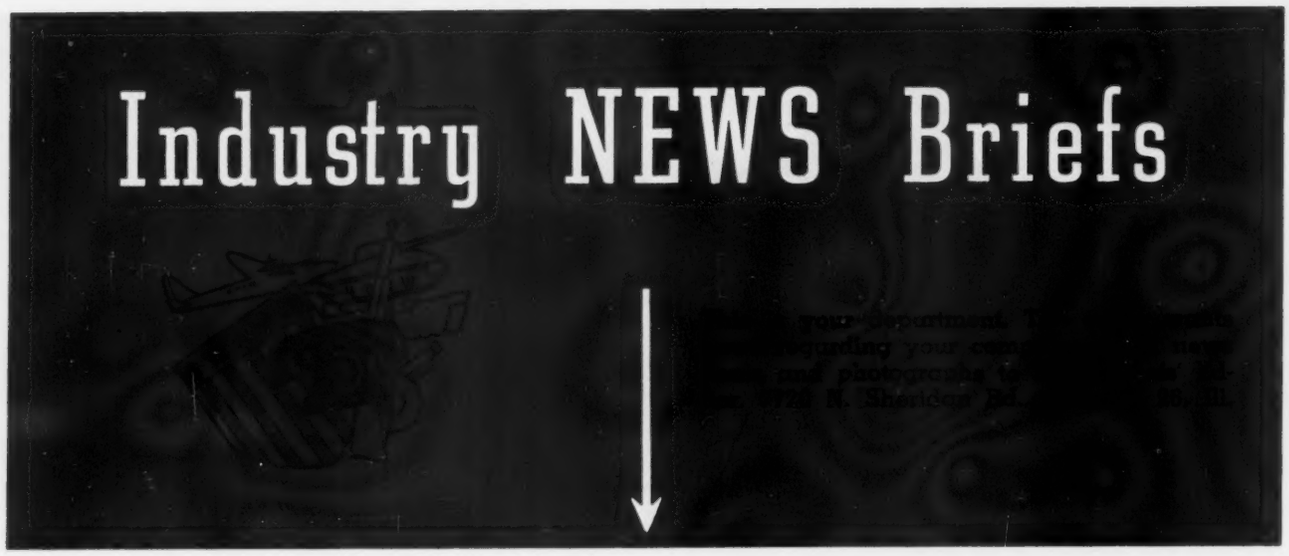
North Subscriber Carrier also is used in many instances to provide much needed private lines or two and four-party service. Our Bulletin C-541 explains in detail its variety of uses. Ask for a copy, or let a North sales engineer show you what *can* be done.

with NORTH Subscriber Carrier

THE NORTH ELECTRIC MANUFACTURING COMPANY

655 South Market Street • Galion, Ohio

Industry NEWS Briefs



BLS Reports on Earnings in Communications Field

EMPLOYES of the nation's interstate communications companies averaged $1.81 an hour in October, 1954, according to the latest tabulation of figures released by the Labor Department's Bureau of Labor Statistics. The October, 1954, figure represented an increase of nine cents hourly over the previous October.

Earnings in the domestic telephone field averaged $1.82 an hour, including $1.40 for switchboard operators, $1.52 for clerical, $1.85 for linemen, and $2.23 for central office repairmen.

Western Union employes averaged $1.62 hourly, ranging from 88 cents an hour for foot and bicycle messengers to $1.81 for Morse operators and $1.87 for linemen and cablemen. The 4782 employes in the radiotelegraph field averaged $1.98 an hour in October, 1954, while the 1317 employes of the three ocean cable carriers averaged $1.99 hourly.

Recommend Service Adequacy As Rate Criterion

CHANGES IN the Maryland Public Service Commission law to make adequacy of service an element in deciding rate cases, and to direct the commission to consider "the value of service rendered to the consumer in the light of rates generally for comparable service," have been recommended by a legislative commission headed by Albert L. Sklar, Baltimore attorney.

The Commission, set up more than two years ago, last month made its conclusions available to the public so that comments can be obtained before they are submitted to the state legislature in January. The group proposed a "value" yardstick in finding utility rate bases, rather than the fair value requirement in the present law.

Bell Cited In Article on Capital Spending

THE IMPORTANCE to the economy of the American Telephone & Telegraph Co. and the Bell System, characterized as the "largest single customer of non-industrial capital goods," was brought out in the final article in the December FORTUNE in its four-part series on "Reinforcements for the Capital Goods Boom."

The Bell System, which has more than doubled its telephone plant since 1946, accounts for around 90% of the capital outlays of the communications group, which includes the radio broadcasting, television, and telegraph industries, the article stated. It was brought out in the article that the AT&T and Bell System had increased annual capital expenditures between 1945 and 1949 from $300,000,000 to $1,700,000,000, and that, while 1949-50 had resulted in a cutback of spending by nearly one-third, capital outlays of the telephone industry turned up in 1951 and regained the high 1948 level of $1,700,000,000.

The FORTUNE article forecast that a very substantial increase in capital expenditures by the communications group could occur by 1959, and the capital outlays of the remainder of the communications group might increase very substantially over the next five years.

EXPANSIONS

- ***Hartsburg (Ill.) Tel. Co.*** **completed installation of new 100-line switchboard.**
- ***General Tel. Co. of N.W.*** **converted its Chewelah, Wash. exchange to dial. Project cost nearly $125,000.**
- ***Farmers Tel. Co.*** **completed installation of dial telephones at Batavia, Ia.**
- ***Union Tel. Co.*** **announced $225,000 dial conversion project for Edmore, Mich. Cutover is scheduled for Oct. 1955.**
- ***Eustis (Neb.) Tel. Exchange*** **completed survey for dial conversion project.**
- ***Carolina Tel. & Tel. Co.*** **started $36,000 expansion program at Henderson, N. C.**

Mankato (Minn.) Company Plans Mobile Service

PLANS FOR the entry of the Mankato (Minn.) Citizens Telephone Co. into the mobile radiotelephone field were submitted to the FCC last month.

The Mankato company, which operates more than 13,000 telephone stations through six exchanges in Minnesota, asked authority for a base station at Mankato and 100 mobile radio units operating on frequencies of 35.54 and 43.54 megacycles, using General Electric Co. facilities.

Municipal Assoc. Opposes Highway Move Payments

THE AMERICAN Municipal Association, in its convention in Philadelphia last month, went on record as opposing any change in the status quo relating to payment to public utilities for relocation of their plant as a re-

Snow, sleet, wind, flood, fire — *each* is a crippler of service and may well prove to be a full-scale emergency.

That's why — when lines go down — telephone companies throughout the nation call on Graybar *first*. From experience, they've discovered Graybar's stand-out facilities for delivering emergency replacement items *fast* —wherever and whenever they're needed.

A nation-wide network of Graybar offices and warehouses provides ready accessibility to stocks of essential telephone supplies.

Through emergencies of all kinds, experienced Graybar personnel have developed the know-how needed to initiate immediate action and efficient follow-through.

Reliable Graybar suppliers are always willing to co-operate in filling extraordinary needs and to add their weight to Graybar's own services.

The next time you need emergency help, make it a point to call your near-by Graybar office. You're sure to get efficient, helpful service — the kind of service that's invaluable in emergencies . . . expected in everyday operations. 221-231

GRAYBAR ELECTRIC CO., INC.
Executive Offices:
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Call Graybar first for...

IN OVER 100 PRINCIPAL CITIES

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(polyethylene based)

INSULATING TAPE

- Quick and easy to apply
  —no sticky adhesive
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- Insures permanent moisture seal
- Has superior electrical insulating properties
- Remains flexible, even at extreme low temperatures
- Lasts as long as the cable insulation
- Unlimited storage life
  —no deformation
  —no deterioration

Detailed method for plastic cable splicing available on request.

BI-SEAL is available through your telephone supply distributor.
Canadian Representative: Drummond & Company, Ltd., Montreal, Quebec.

APPLIES FAST · STAYS FAST BI-SEAL **BISHOP** MANUFACTURING CORPORATION
14 CANFIELD ROAD, CEDAR GROVE, NEW JERSEY

sult of federal-aid highway construction. Although about 750 municipal officials attended the gathering, only a few were present when the resolution was passed.

The resolution states that no change should be made "at this time" in the Fedarl Highway Act's provisions on reimbursing the utilities. At present, only railroads are paid for relocation. The convention went on to recommend further study of the subject by the AMA Executive Committee.

Earlier, Detroit Commissioner of Public Works Glenn C. Richards declared that there is no reason why public utilities should be reimbursed for their highway relocation expenses. It has been reported that some cities, including Detroit, are being reimbursed for their costs in moving publicly-owned utility plant, but many others, including Jacksonville, Fla., and Tennessee cities, which have appeared at Congressional hearings, are not.

Kansas Co-op Seeks OK to Buy Seven Exchanges

A PROPOSED REA telephone cooperative applied to the Kansas Corporation Commission last month for permission to buy seven Central Kansas exchanges and convert them to dial service. The application was filed by Golden Belt Telephone Association Inc., Timken.

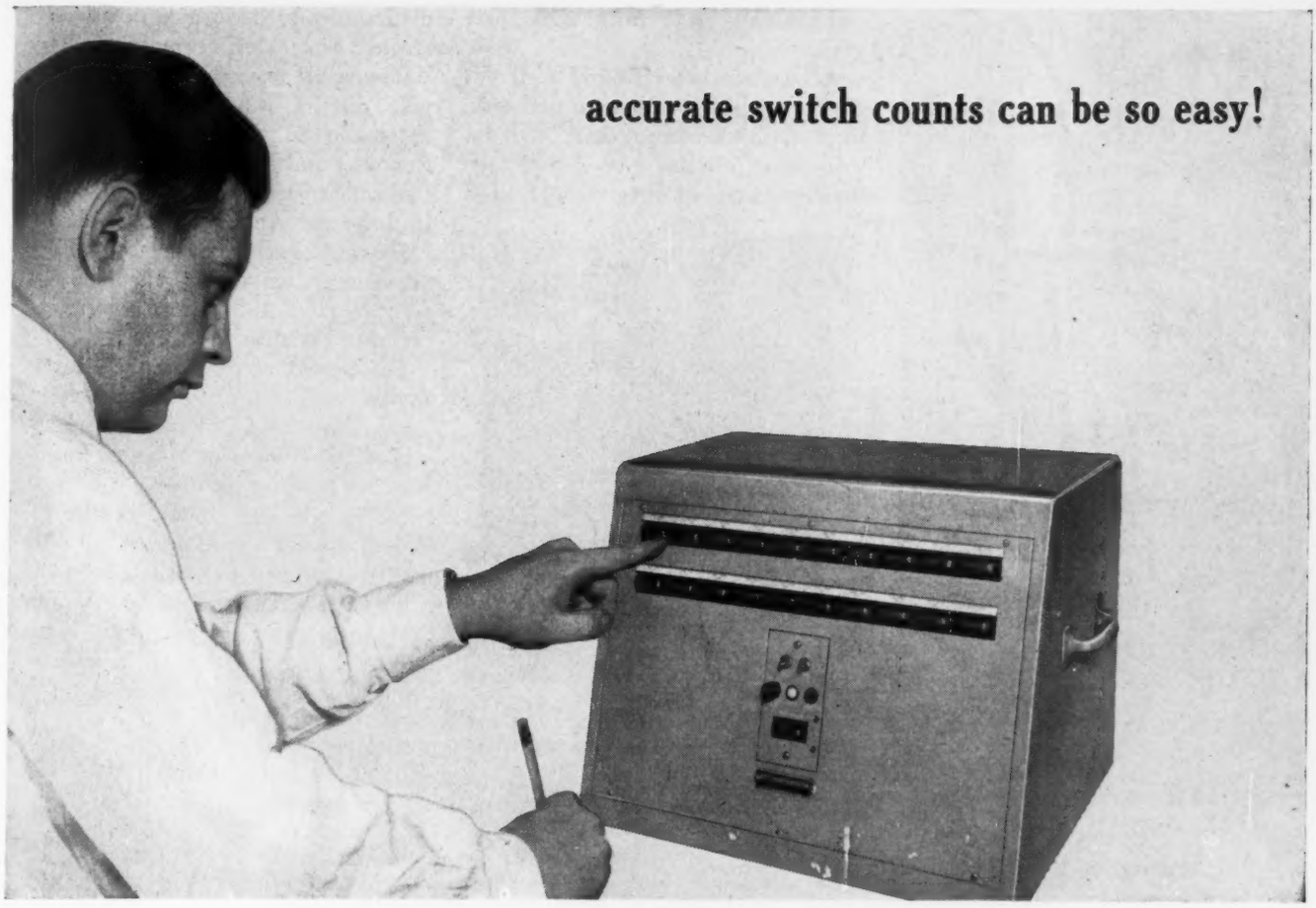
Exchanges at Timken, Rozel, Rush Center, McCracken, Nekoma, Alexander, and Albert owned by six private companies are involved in the proposal.

The new association will finance the transaction by borrowing $515,000 from the Rural Electrification Administration and by issuing membership and equity certificates.

Cutover Completed At Leesburg, Ohio

OHIO CONSOLIDATED Telephone Co. completed conversion of its Leesburg, Ohio, exchange from magneto to automatic operation on November 3, 1954. The Leesburg exchange control point will be at Greenfield, nearby company exchange.

The new central office building, automatic equipment, telephones, cable and associated wire plant represent an investment of approximately $85,000 in the company's $1,750,000



use Automatic's

Trafficorder

Pays for itself in improved service

HERE'S RELIEF from the tedious task of taking switch counts by sight! Trafficorder takes them for you automatically, takes more per hour than is humanly possible, and does it with absolute accuracy. Never gets tired, never misses a switch. Just put Trafficorder where you want it (it's easily portable). Then connect power and trunks and set for either a one-hour or continuous test. Every 10 seconds, Trafficorder "scans" all trunks in the group to which it is connected, and totals the number of busy trunks on a counter for each group. Counters read directly in unit-calls so you can use standard traffic tables without fuss or figuring to determine the switch requirements for the grade of service you want. Telephone men who use Trafficorder say it pays for itself in improved service. Write for informative Circular TE 1799 today!

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Originators and Developers of the Strowger Step by Step "Director" for Register Sender-Translator Operation . . Machine Switching Automatic Dial Systems

Makers of Telephone, Signaling and Communication Apparatus - Electrical Engineers, Designers and Consultants

Distributors in U. S. and Possessions AUTOMATIC ELECTRIC SALES CORPORATION
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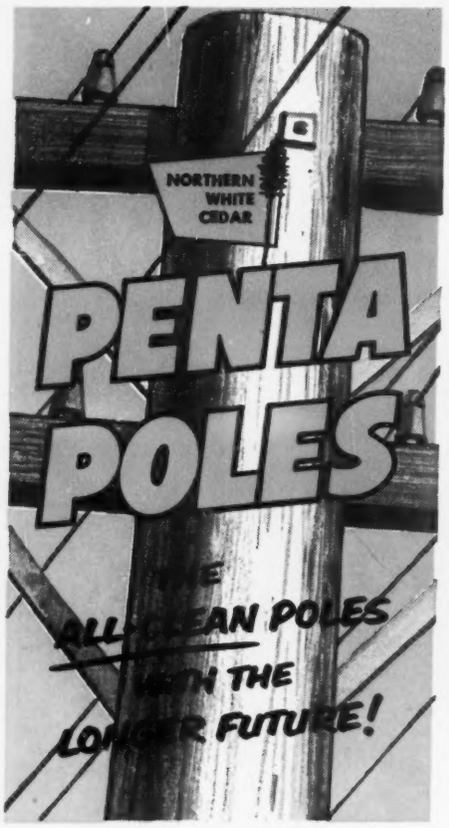

The use of Northern White Cedar treated full length with Penta is your best choice for permanent pole line structure. Linemen prefer them because they are safer, cleaner, lightweight and easy to handle. Engineers recommend them for their stability, durability and uniformity. No other pole has a combinatoin of so many advantages. Install P & H PENTA POLES in your lines. They are your best buy.

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"Full-Length Treated Northern White Cedar P & H PENTA POLES,"
TODAY!

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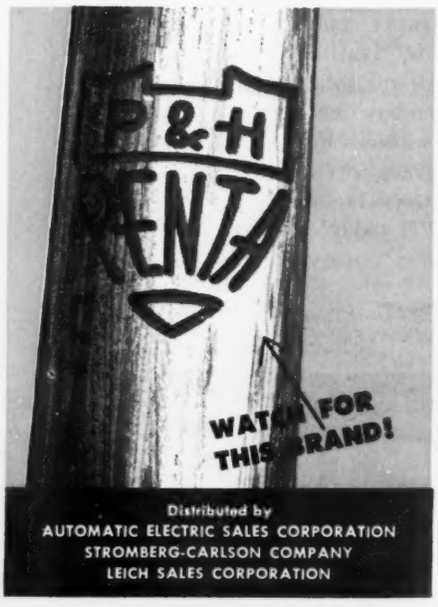
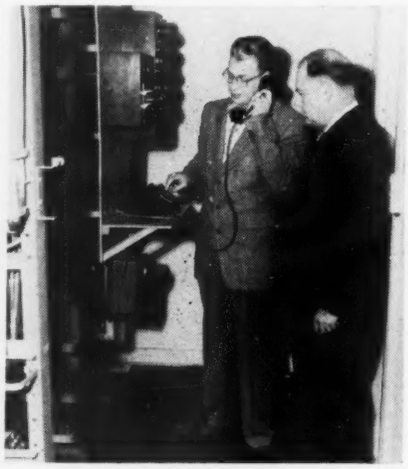
MINNEAPOLIS 2, MINNESOTA
50 CHURCH STREET • NEW YORK CITY, N.Y.



Distributed by
AUTOMATIC ELECTRIC SALES CORPORATION
STROMBERG-CARLSON COMPANY
LEICH SALES CORPORATION

construction program now in progress.

A personal letter from Mr. B. M. Cline, Wilmington district manager, to each Leesburg customer and appropriate advance newspaper announcements and advertising, with a new telephone directory distributed just a few days before the conversion prepared them for the change to automatic service which was accomplished without a "hitch."



LEESBURG, OHIO: — Honorable JOHN BARRETT, Mayor of Leesburg, Ohio, places first call over town's new dial system as J. M. SUTHERLAND, assistant district manager of the Ohio Consolidated Tel. Co. at Wilmington, watches.

Richard N. Cole, president of Ohio Consolidated, reports that New Bremen, in the St. Marys district, is next on the schedule of conversions. New Bremen will be a 450 line automatic office to be located in a newly erected central office building. The Williamsport exchange in the Circleville district will be converted to automatic in January, 1955. The Holloway and Jewett exchanges in the Cadiz district, also to be converted in July and August, 1955, and the Millersport exchange in the Circleville district tentatively scheduled for conversion in 1956, are the only remaining magneto exchanges.

In December, 1955, the Portsmouth main office will be made fully automatic with 5,000 lines to be installed in a new central office building now being erected. The new building will also contain the Portsmouth district toll operation with 18 positions of new toll switchboard instituting operator toll dialing in the Portsmouth area. At the present time only the Portsmouth business customers have automatic service.

25,000th Telephone Installed In Lafayette, Ind. Area

THE RECENT TELEPHONE installation in the home of Mr. and Mrs. K. E. Lewis, 1104 Sarasota, Lafayette, Ind., was a significant milepost in the progress and growth of General Telephone Co. of Indiana, Inc. The installation brought the total number of telephones serving the Greater Lafayette area to 25,000, twice the number served during World War II.

C. B. Hansen, Lafayette commer-

CHRIS HANSEN, Lafayette commercial manager for General Telephone Co. of Indiana, helps Karen Lewis, 2½, and sister Nancy, 8 months, get checked out on their new telephone, the 25,000th telephone installed by General Telephone in the Greater Lafayette area. MRS. K. E. LEWIS seems to be getting the message all right but Nancy looks a little dubious.

Lower installation costs with Copperweld LINE WIRE

Many companies have found that it costs less to install Copperweld* Line Wire than any other type. It's light in weight, smooth, easy to handle and economical to string, even on the longest spans. Next time you order line wire, specify "Copperweld." You'll find it pays!

TWO POPULAR SIZES

.104"-40 High Strength for toll lines and long subscriber loops.

.080"-30 Extra High Strength for short subscriber loops and secondary toll lines.

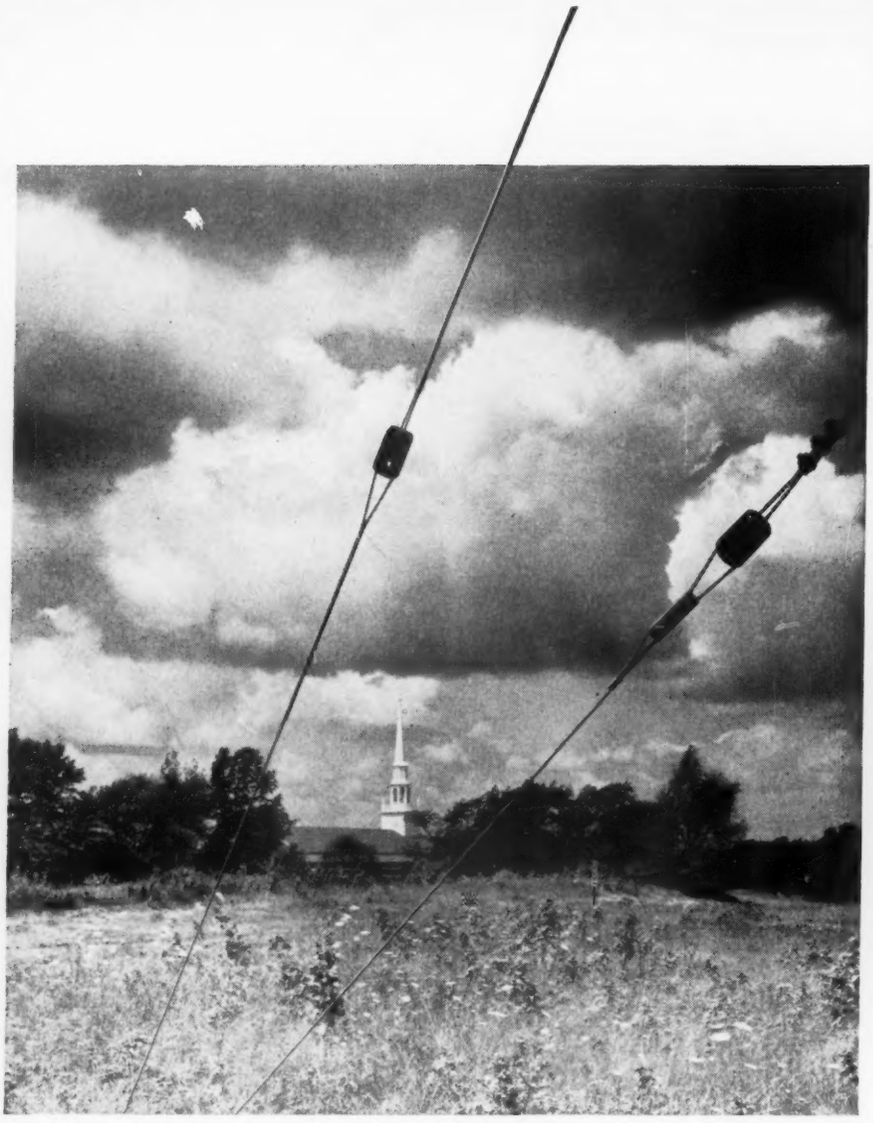
*Trade Mark

Good Engineering Demands the Best Materials . . .

COPPERWELD STEEL COMPANY
WIRE AND CABLE DIVISION
Glassport, Pa.
For Export: COPPERWELD STEEL INTERNATIONAL COMPANY, New York

COPPERWELD NON-RUSTING LINE WIRE and GRIP-FLEX TIES . . . The Ideal Combination

SOLD BY LEADING DISTRIBUTORS



Guy-Grips*

BY PREFORMED

...Economical

...Neat

...Efficient

*at the left

PREFORMED LINE PRODUCTS CO.
5349 ST. CLAIR AVE. • CLEVELAND 3, OHIO

cial manager for General Telephone, said, "The installation is an important milepost in the company's continuing efforts to keep pace with the amazing growth of the Greater Lafayette area. In the last 12 years we have added 12,500 telephones in this area . . ."

Elyria, Ohio, Company Wins Advertising Honor

FOR OUTSTANDING achievement in advertising, the Elyria(Ohio) Telephone Co. was one of 13 Ohio companies to receive plaques in The Cleveland Advertising Club Sixth Annual Awards for advertising which produces and reaches its objectives.

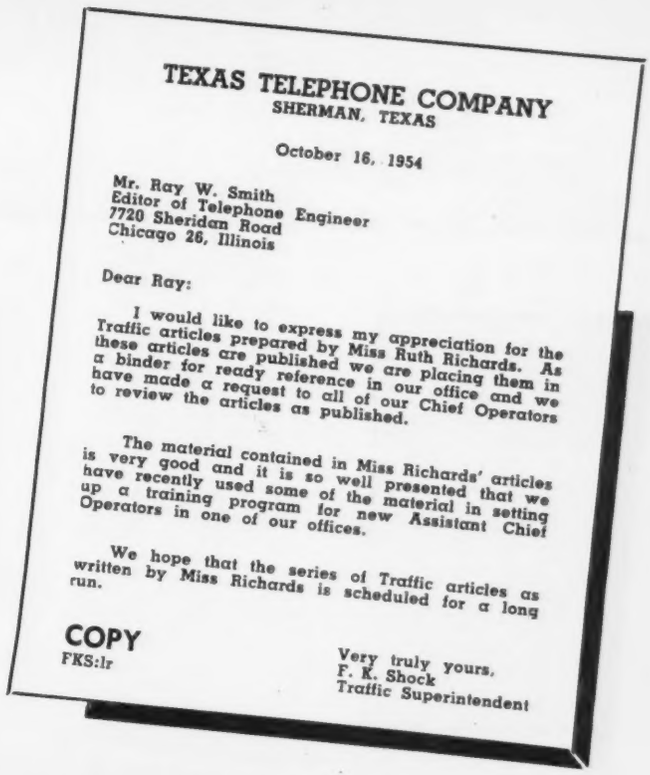
Advertising carried in 1953 and which is prepared by Cleveland agencies or individuals was entered. The advertising was judged by a committee of nationally known advertising executives. There were 47 entries.

The Elyria campaign, using large weekly newspaper units and daily radio time, sought to win the cooperation of the public in a situation in which the service was not the best because of the rapid growth of the city far exceeding the facilities. It was an "all the cards on the table" campaign and gave assurance that relief was coming at the end of 1955. Roy W. Ammel, president and general manager, reports that complaints to the Public Utilities Commission of Ohio, the Elyria officials and to the company fell off nearly 75% as the result of the advertising. The campaign is continuing.

Anson F. Hardman of Cleveland, who for 28 years was advertising and public relations director of The Ohio Bell Telephone Co., has been handling these activities for the Elyria company for the last two years.

From Letters Like This . . .

Your editors realized the need for an up-to-date course for training traffic personnel. As a consequence Miss Ruth E. Richards (well known through her writings in Telephone Engineer & Management and with 37 years of experience to call upon) prepared the following course to appear in future issues of Telephone Engineer Magazines.



TEXAS TELEPHONE COMPANY
SHERMAN, TEXAS

October 16, 1954

Mr. Ray W. Smith
Editor of Telephone Engineer
7720 Sheridan Road
Chicago 26, Illinois

Dear Ray:

I would like to express my appreciation for the Traffic articles prepared by Miss Ruth Richards. As these articles are published we are placing them in a binder for ready reference in our office and we have made a request to all of our Chief Operators to review the articles as published.

The material contained in Miss Richards' articles is very good and it is so well presented that we have recently used some of the material in setting up a training program for new Assistant Chief Operators in one of our offices.

We hope that the series of Traffic articles as written by Miss Richards is scheduled for a long run.

COPY
FKS:lr

Very truly yours,
F. K. Shock
Traffic Superintendent

A Practical Guide For Training Traffic Employes

SERVICE is more than a seven letter word. Service is the sum total of what your office offers or provides its customers. It is produced most easily by people especially trained for the job — who know how to deal with customers and with each other in daily contacts. Complete and detailed outlines of "what every supervisor should know" will be presented in this new series that will appear in lesson form in coming issues of Telephone Engineer Magazines.

Now Traffic Superintendents like Mr. Shock will not have to piece together the various articles written by Miss Richards in order to have an up-to-the-minute training manual. They will have a complete course in proper training order at their finger tips through this new course.

To present a more clear picture of the completeness of this course a partial breakdown of its contents follows.

Handling Operator Requests for Assistance:
- (a) In frequently encountered conditions
- (b) Difficulty in handling calls

Administration of Force
- (a) Applying the seating plan
- (b) Securing replacements for absentees
- (c) Rearranging force to meet unusual conditions

Management of A Division
- (a) Overlapping
- (b) Teamwork

Customer Contacts
- (a) Tone of service
- (b) Handling Customer contacts
- (c) Assisting customers on calls on which difficulty is encountered
- (d) Handling criticisms

Emergency Activities
- (a) Handling emergency calls
- (b) Action in case of a central office emergency
- (c) Action in case of a public emergency

TELEPHONE ENGINEER & MANAGEMENT ....., **1955**
7720 Sheridan Road, Chicago 26, Illinois

Gentlemen: Please enter a subscription to each of the following employes. (I) (We) will send check to cover them at $3.00 each for one year upon receipt of your statement.

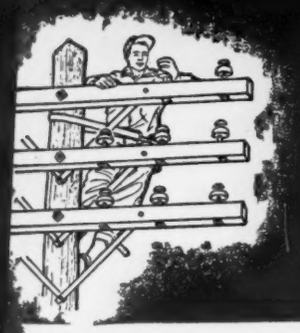
Name _____ Title or kind of work _____ Address _____

Name _____ Title or kind of work _____ Address _____

Name _____ Title or kind of work _____ Address _____

Name _____ Title or kind of work _____ Address _____

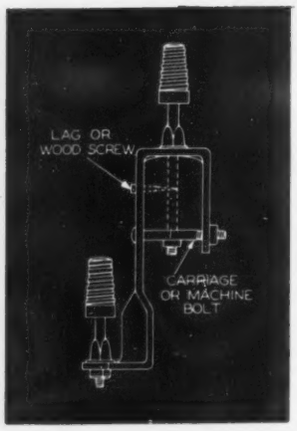
SIGNED: _____ COMPANY _____ ADDRESS _____

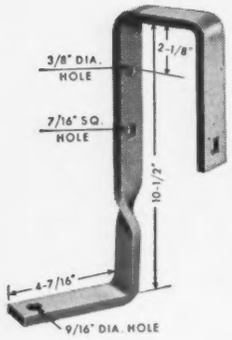


LINE CONSTRUCTION BLUEPRINTS

ITEMS SOME COMPANIES ARE USING TO MAKE LINE CONSTRUCTION WORK EASIER

L-M Transposition Brackets

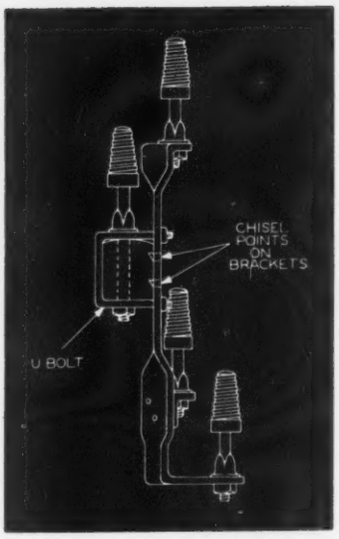


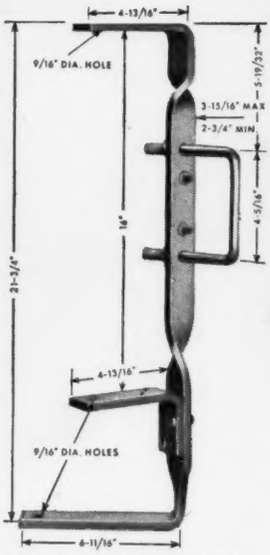


SINGLE-POINT DROP TYPE BRACKET

Cat. No. 331497X6

One-piece single-point unit for transposing two wires on a single circuit. Usually used where pull is not over 10 feet. Made of 1½" x ⅜" flat steel, hot dip galvanized.

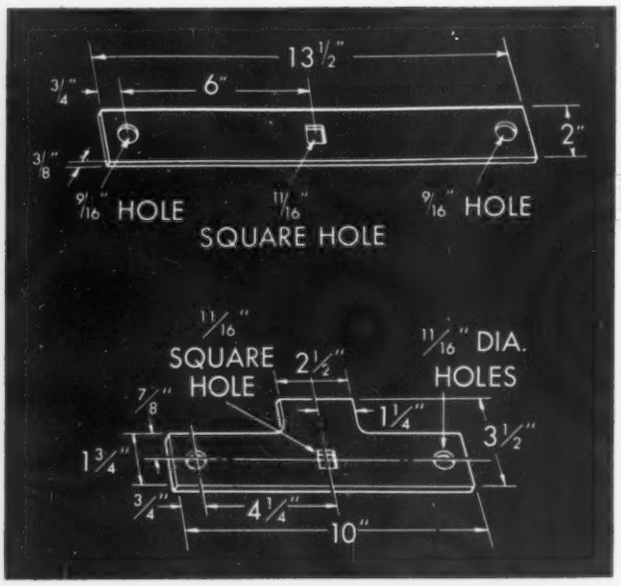




3-POINT PHANTOM CIRCUIT BRACKET

Cat. No. 330495X1

One-piece three-point bracket for phantom transpositions on separate insulators. Used where pull is not over 10 feet. Made of 1½" x ⅜" flat steel, hot dip galvanized.



TANDEM BRACKETS

TYPE B.

Cat. No. 330051A1

Of ⅜" x 2" steel, for straight sections and corners where pull is less than 15 feet.

TYPE C. **Cat. No. 330071A1**

Of ½"-thick steel, for angles, where the extra section gives additional support on inside of the angle. For use where pull is at least 15 feet but not over 50 feet.

Do You Have a Line Construction Problem?

These are just a few of thousands of L-M line construction specialties. If you have a line construction problem, let us know. We may have standard or special items in stock that will solve it. Ask the North Electric or Kellogg representative, or the L-M Field Engineer. Or write Line Material Company, Milwaukee 1, Wisconsin (a McGraw Electric Company Division).

153

LINE MATERIAL

Line Construction Materials

Sold for L-M to the independent telephone industry

by

KELLOGG Switchboard and Supply Company

and

THE NORTH ELECTRIC MANUFACTURING COMPANY

Springs into Action . . .

THANKS TO BATTERY POWER!

Specify GOULD PLANTÉ— The Aristocrat of Stationary Batteries

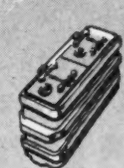
It's mighty satisfying to know the racks in your battery room are filled with Gould's Planté Batteries . . . ready to spring into instant action whenever they're needed. With Plantés, you've got unfailing power for years to come. Many Plantés have been in service 20, 30 years and longer! That's because their positive plates are *pure, solid lead* . . . lead that continually changes into fresh active material throughout battery life. With Gould Planté, float current is minimized, service life is increased, per annum cost is lowered.

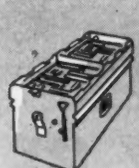
Always Use Gould-National Automobile and Truck Batteries

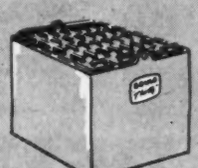
©1954 Gould-National Batteries, Inc.

GOULD BATTERIES

GOULD-NATIONAL BATTERIES, INC.
TRENTON 7, N. J.


For Railroad Air Conditioning and Lighting


For Mine Shuttle Cars and Locomotives


For Electric Industrial Trucks

For Diesel Locomotive Starting

For Standby and Emergency Power

Them revenooers don't worry me— why, that still is hidden clear down by the next pole

• No sir, nobody's going to find a still that's hidden as far away as the next pole. Those poles are strung with Amertel 135, and they're a long way apart.

To be specific, high-strength Amertel 135 can be strung 2½ times as far as ordinary BB wire. You don't have to dig so many holes and you don't have to set so many poles. That saves on poles and pole hardware, and saves a tremendous amount of work, too.

In addition, Amertel 135 has far better voice transmission quality than the old steel wire, and it will withstand greater ice and wind loads.

Write today for more information about this time-tested, money-saving telephone wire. Address the American Steel & Wire Division, Rockefeller Building, Cleveland 13, Ohio.

AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL CORPORATION
GENERAL OFFICES: CLEVELAND, OHIO

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UNITED STATES STEEL

Telephone Engineer

EDITORIAL

Telephone Engineer

Great Years To Come

THERE IS A NEW job in the telephone business, and a word — of new importance to the business — which describes it. The job, and the word, is "merchandising."

For the first time in the history of the business there is a program, practically nation-wide and rapidly becoming industry-wide, for merchandising telephone service and the use of various of the appliances useful in connection with such service.

Bell System operating companies have gone at the proposition in their usual thorough manner, and a number of such companies are already experiencing highly satisfactory results from selling campaigns. A considerable number of Independent companies are also either carrying on or readying selling programs.

The word "merchandising" is aptly used to describe these activities. These selling efforts are not confined merely to plans for encouraging non-subscribers to become subscribers to telephone service.

The proposition of gaining new subscribers is of course a basic endeavor in all telephone selling campaigns, and the old selling stand-by of adding extension telephones is still a close second.

But a telephone merchandising program is not limited only to gaining telephones and extensions. It also sells upgraded service, special cords, colored telephones, special apparatus for meeting particular needs of the subscriber, and various other applications of telephone service. In many cases, it is reported, the customer was unaware that the service or special apparatus offered him were obtainable, and was delighted to have the opportunity of subscribing for it.

Obviously, various types of service are offered only when and where the telephone company's then plant and equipment situation allows them to be supplied without delay. But, it is reported, practically every telephone company can provide some services or special apparatus that can be sold.

Merchandising programs have in some cases developed the fact that there are many types of special service that are useful to various telephone users, and that can be supplied by the telephone company without departure from its basic undertaking of supplying standard telephone service.

This whole concept of merchandising telephone service is in our opinion a long step forward for the telephone industry.

It marks an important departure from the old concept that all the telephone company had to sell, or should supply, was "local and long distance."

This new concept, without in any way impairing the old one, broadens that base considerably. One important element of the new concept is that it takes cognizance of the fact that different subscribers have different needs — and there must be literally thousands of cases where the subscriber needs and is anxious to have special applications of telephone service — and is quite willing to pay the rate that makes such use of the telephone possible to him.

We believe that the idea of merchandising telephone service will turn out to be one of the best things that has come to the telephone industry in a long time!

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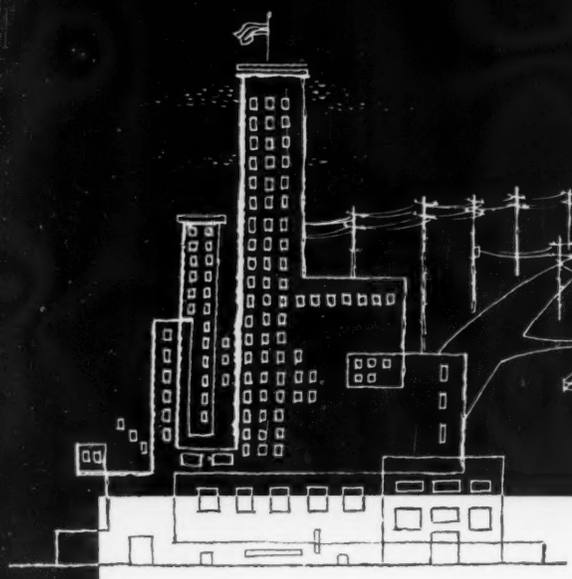
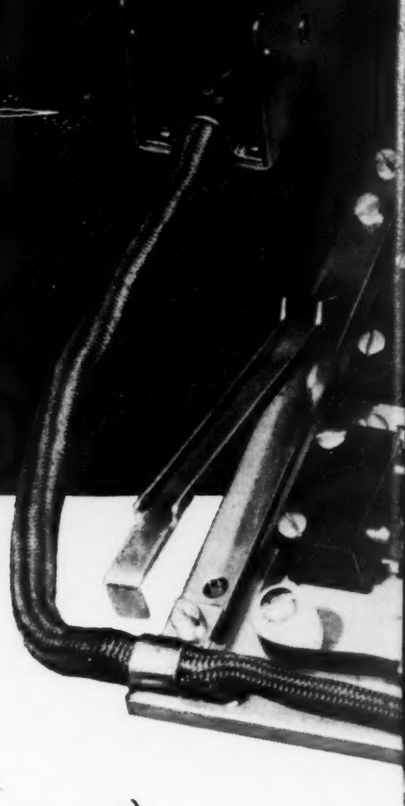


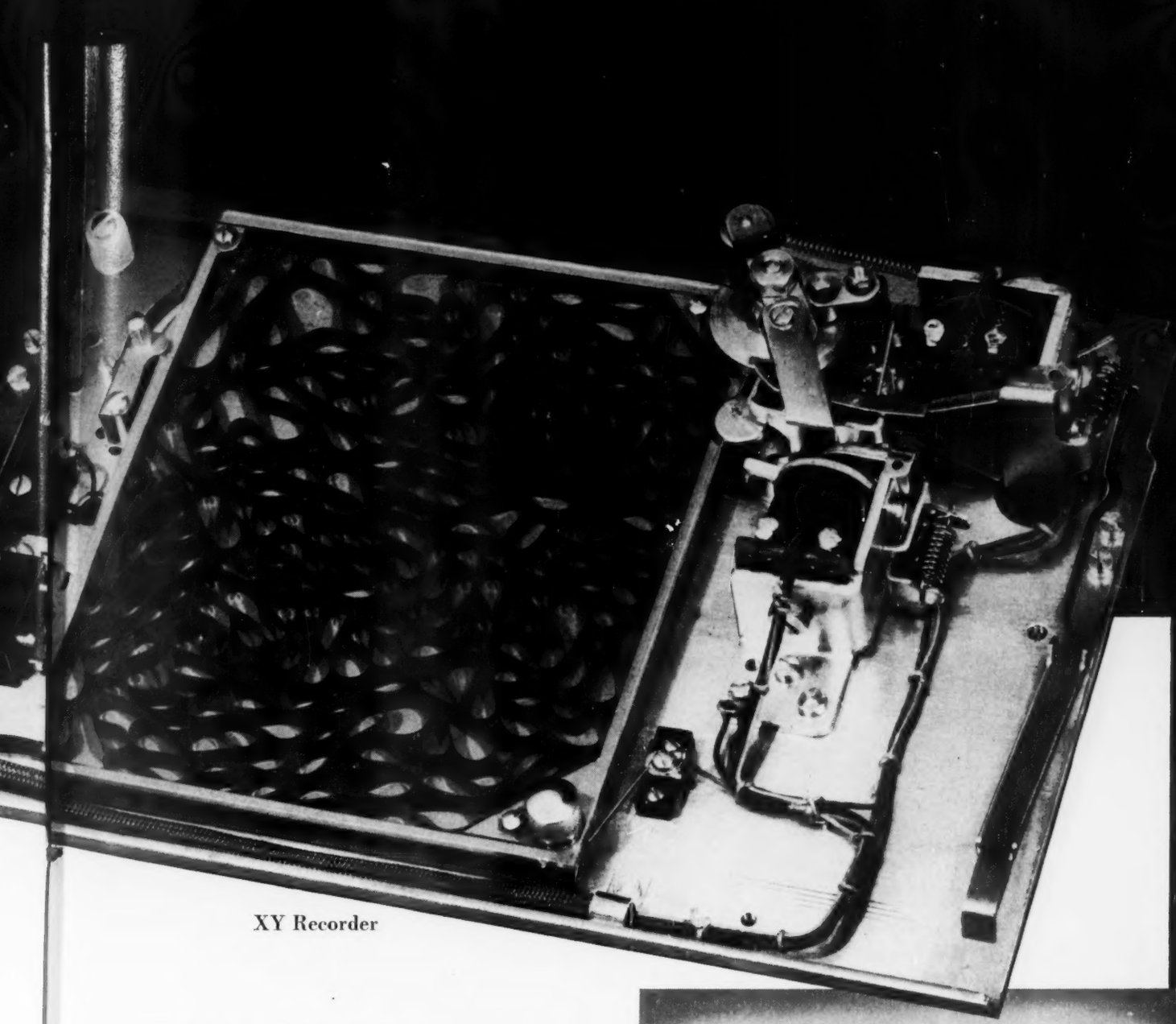


Are you happy with your profits (or losses) on short-haul tolls?

If expensive recording and billing expenses are reducing the *gross* income from your short-haul tolls to zero—or to a loss, you need the Stromberg-Carlson XY* Toll Ticketing system.

Here is Electronics at its time-saving, money-making best! From the moment a subscriber reaches a trunk to a toll point to the moment conversation is completed and the receiver replaced, the XY Toll Ticketing system answers, monitors, verifies, records and computes the data. It even prints it on a uniform ticket from which billing is made.

- **XY Toll Ticketing is unattended—the first *person* concerned is whoever gathers up the printed tickets each morning.**
- **XY Toll Ticketing's recorder has a storage capacity of 100 calls per trunk—and will automatically clear itself when near-capacity is reached or a pre-determined playback time comes around.**
- **XY Toll Ticketing will work with *any* system in which connections are made in direct response to the subscriber's dialing operation.**
- **XY Toll Ticketing includes control circuits by which trunks in remote offices can be "read" and their stored information played back to one central ticketing source.**
- **XY Toll Ticketing's magnetic tape, electronic tubes and mechanical components are built to *last* far beyond even high standards of performance.**

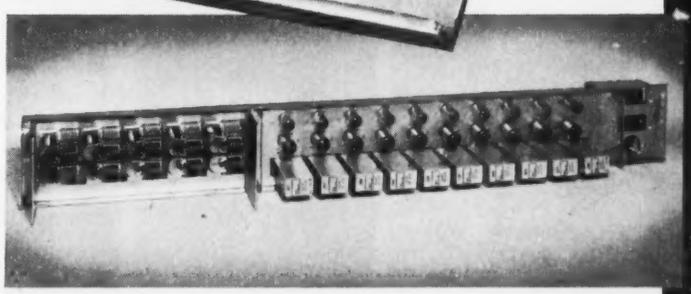


XY Recorder

- **XY Toll Ticketing is one of the soundest investments you'll ever make—since, with it, A-B toll operation ceases to be a headache and becomes profitable.**

These are the main components of the XY Toll Ticketing system:

- **XY Recorder—with endless magnetic tape and automatic playback.**
- **XY Identifier Circuit, to identify thousands, hundreds, tens, and units digits of the calling party's number.**
- **Printing and Cutting Unit—basket holds up to 2500 tickets.**



Identifier Circuit

Printing-Cutting Unit

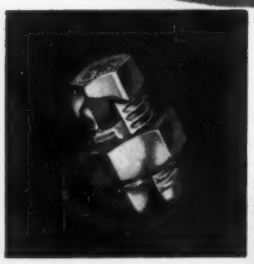
Stromberg-Carlson®

FACTORY, GENERAL OFFICES: ROCHESTER 3, NEW YORK

Sales Offices: Atlanta 3, Chicago 6, Kansas City 8, Rochester 3, San Francisco 3. Manufacturing Branch, Dallas.

*Reg. U. S. Pat. Off.

Reliable BRIDGING CONNECTORS



No. 9 F Plain Bronze
No. 9 FG Plated Bronze

No. 9 FB
Plain with Washer
No. 9 FGB
Plated with Washer

No. 8 F
Plain Bronze
No. 8 FG
Plated Bronze

No. 8 FB
Plain with Washer
No. 8 FGB
Plated with Washer

WHEN YOU BUY BRIDGING CONNECTORS—

you should be sure they are forged, close grained and designed with an eye on minute details. You should be sure all edges and corners are rounded and sure that you will get accurate threads for permanent high pressure connections.

Reliable offers all these features. You can order them plated and with or without spacers — however you wish them.

RELIABLE ELECTRIC COMPANY
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Telephone Protective and Terminal Equipment for all Station, Line and Central Office Needs.

OVER 45 YEARS' SERVICE TO THE UTILITIES

from the Capitol

Washington Bureau Reports

By ROLAND DAVIES & FRED HENCK

***TELEPHONE** advisory committee meets with REA officials. Committee submits its recommendations on — (1) Financing; (2) Cooperation to Expedite the REA Program; (3) Bidding; (4) Equity; and (5) Extended Area Service.*

A GROUP of recommendations centered around the need for greater understanding among potential Rural Electrification Administration telephone borrowers of the objectives and requirements of the REA program has been submitted to Administrator Ancher Nelsen by the telephone advisory committee Mr. Nelsen had appointed earlier.

The advisory group met in Washington in December at the invitation of REA. The 18-member committee includes representatives of telephone and electrification borrowers, the US Independent Telephone Association, Bell System, consulting engineers, and state commissions.

It was agreed by the consultants the thousands of small Independents and mutuals now operating systems in rural areas should be encouraged to examine the REA program and consider use of its loan services in the event financing assistance is needed to improve and extend their service in farm areas.

The committee emphasized that more publicity should be given to changes in REA telephone loan policy, particularly the ruling that an applicant can secure a loan for part of his system under certain circumstances.

Text of the statement of recommendations to REA was as follows:

"Financing:—That all telephone companies, associations, or groups encourage and assist in the expansion and improvement of telephone service to rural areas and that they consider REA financing where needed.

"Partial System Financing:—That REA publicize its policy permitting an applicant to secure a loan for a part of its system if the area under consideration is economically feasible as a unit.

"Cooperation to Expedite Program:—That, insofar as practicable, REA continue its efforts to obtain complete cooperation between the applicant for a loan, the connecting company, the engineer, contractor, suppliers, manufacturers, and state regulatory body in order to expedite the availability of adequate telephone service to rural areas.

"Bidding:—That REA clarify and publicize its policy on competitive bidding for borrower's construction and for purchase and installation of central office equipment, so that applicants may understand fully what exceptions are permitted.

"Equity:—That REA clarify and publicize the bases for equity requirements which it establishes for commercial borrowers as security for the REA loan.

"Extended Area Service:—The committee finds that extended area service is still a problem to REA applicants and connecting companies in some instances, and for that reason recommends that all parties concerned get together early and on a cooperative basis for planning and engineering proper equipment. It is recommended, also, that at this time an equitable extended area service settlement agreement be negotiated. It is suggested that as a guide the report of the Extended Area Service Committee, which was adopted by the USITA Board of Directors, be used.

"In addition to those aspects of the REA rural telephone loan program listed above, the committee also discussed: availability and standards of engineering, ways of reducing cost of construction, methods for expediting loans, problems involved in obtaining approval by regulatory bodies, and a number of other related matters. No specific recommendations were agreed upon regarding these items."

Mr. Nelsen said that he is turning over the recommendations to his telephone loan staff for study and action to the extent practicable. "We know," he said, "there are still problems in the telephone loan program, even though we are just completing REA's most successful calendar year. The difficulties touched on by the advisory group at their meeting and in their statement are the very ones which are of most concern to REA. We are gratified at this understanding of our trouble spots by these telephone men who have outstanding reputations in the industry."

In a statement immediately following its meeting, prior to the development of its recommendations,

the advisory group reported that "Problems which were examined included the following: difficulty in obtaining satisfactory agreements with connecting companies for extended area service; the shortage of consulting engineers; equity requirements for commercial companies which apply for REA loans; the possibility of loans for a single exchange area at a time for an applicant's system; the need for consultation on how best to provide service in certain specified areas; and attitudes within the telephone industry toward the REA loan program to improve and extend telephone service in rural areas."

Among those attending the meeting were Wisconsin Public Service Commissioner George P. Steinmetz, two representatives of the US Independent Telephone Association, Warren B. Clay of Hutchinson, Minn., and William C. Henry, of Bellevue, Ohio, and Orla L. Moody, Staff Engineer of the American Telephone & Telegraph Co.

Other members of the group included a number of REA borrowers, both commercial companies and co-ops, such as Glenn Bergland, Thompson, Ia.; James L. Capel, Champaign, Ill.; Ross Gault, Gardner, Kans.; J. Lee Keiger, Sr., Winston-Salem, N. C.; Frank Richmond, Gainsboro, Tenn.; C. J. Stover, Mt. Vernon, Wash.; and C. R. Thiessen, Lambert, Mont. Among other members are two former REA staff officials, Daniel B. Corman, vice president of the Northeastern Telephone Co., with headquarters at Louisville, Ky., and Riggs Shepperd, manager of the Medina Electric Co-op, Hondo, Tex.

In his report of the meeting, Mr. Nelsen also announced that gross telephone loans for the calendar year 1954 by REA were about $65,000,000, topping calendar 1953 by about $15,000,000. He expressed concern, however, at the leveling off in loan applications and approvals at a rate less than that anticipated by the agency.

Bell Policies On Leasing And Maintenance Agreements

BELL SYSTEM policies with regard to equipment leasing and maintenance agreements with private radio licensees are designed to make the fullest use of "engineering, installation, and maintenance facilities and skills" organized primarily to meet common carrier communications responsibilities, and to work to strengthen rather than weaken frequency allocation patterns for private radio licensees, the Bell System has pointed out in a statement.

The statement was furnished by responsible Bell System officials at the request of TELECOMMUNICATIONS REPORTS, Washington correspondents for this publication, for an explanation of the telephone companies' thinking, in the light of various criticisms from organizations and individuals in the mobile radio field.

Various spokesmen for the communications managers of some companies which have set up their own private radio systems, using frequencies allocated for that purpose by the Federal Communications Commission, have charged that Bell System offerings of equipment lease-maintenance arrangements to the private radio users are aimed at undermining the private frequency assignments.

In addition, the FCC has studied the question, and agreement was reached at a meeting between Commission and Bell System representatives for a few changes in the lease-maintenance contracts being offered by some of the Bell companies.

The Bell System statement, in its entirety, was as follows:

"The (FCC) has allocated frequencies for two broad types of mobile radiotelephone facilities—common carrier systems to serve the general public and systems for the private use of individual licensees.

"The Bell companies, in providing common carrier radio services, have organized engineering, installation, and maintenance facilities and skills to fulfill their responsibilities in this field. It is natural that private radio system licensees should want to benefit from these resources and in the public interest that they be able to do so if they wish.

"The provision of such assistance

(Please Turn To Page 66)

PRIZE WINNERS: — At the 1954 U.S.I.T.A. convention Cook Electric Co., Chicago, gave a cook book to the wives of U.S.I.T.A. members who registered in a drawing for the prizes offered by the company. Winners in the drawing for the three prizes are shown above (L. to R.): — MRS. H. R. BOLLINGER, Waconia, Minn.; MRS. VERNA DRAHEIM, Port Edwards, Wis.; and MRS. CLAUDINE SHOEMAKER, Norwich, N. Y. Each winner was sent a Dormeyer "Rotisserie."

Coming Conventions

Minnesota Telephone Association, Saint Paul Hotel, St. Paul, Feb. 14, 15 and 16.

Louisiana Telephone Association, Jung Hotel, New Orleans, Feb. 16 and 17.

Kentucky Independent Telephone Association, Phoenix Hotel, Lexington, March 1.

Texas Telephone Association, Plaza Hotel, San Antonio, March 14 and 15

Nebraska Telephone Association, Cornhusker Hotel, Lincoln, March 22 and 23.

Ohio Independent Telephone Association, Deshler Hilton Hotel, Columbus, March 28, 29 and 30.

United States Independent Telephone Association Executives Conference, Belleview-Biltmore Hotel, Belleair, April 4 and 5.

Iowa Independent Telephone Association, Fort Des Moines Hotel, Des Moines, April 12 and 13.

Wisconsin State Telephone Association, Loraine Hotel, Madison, May 4 and 5.

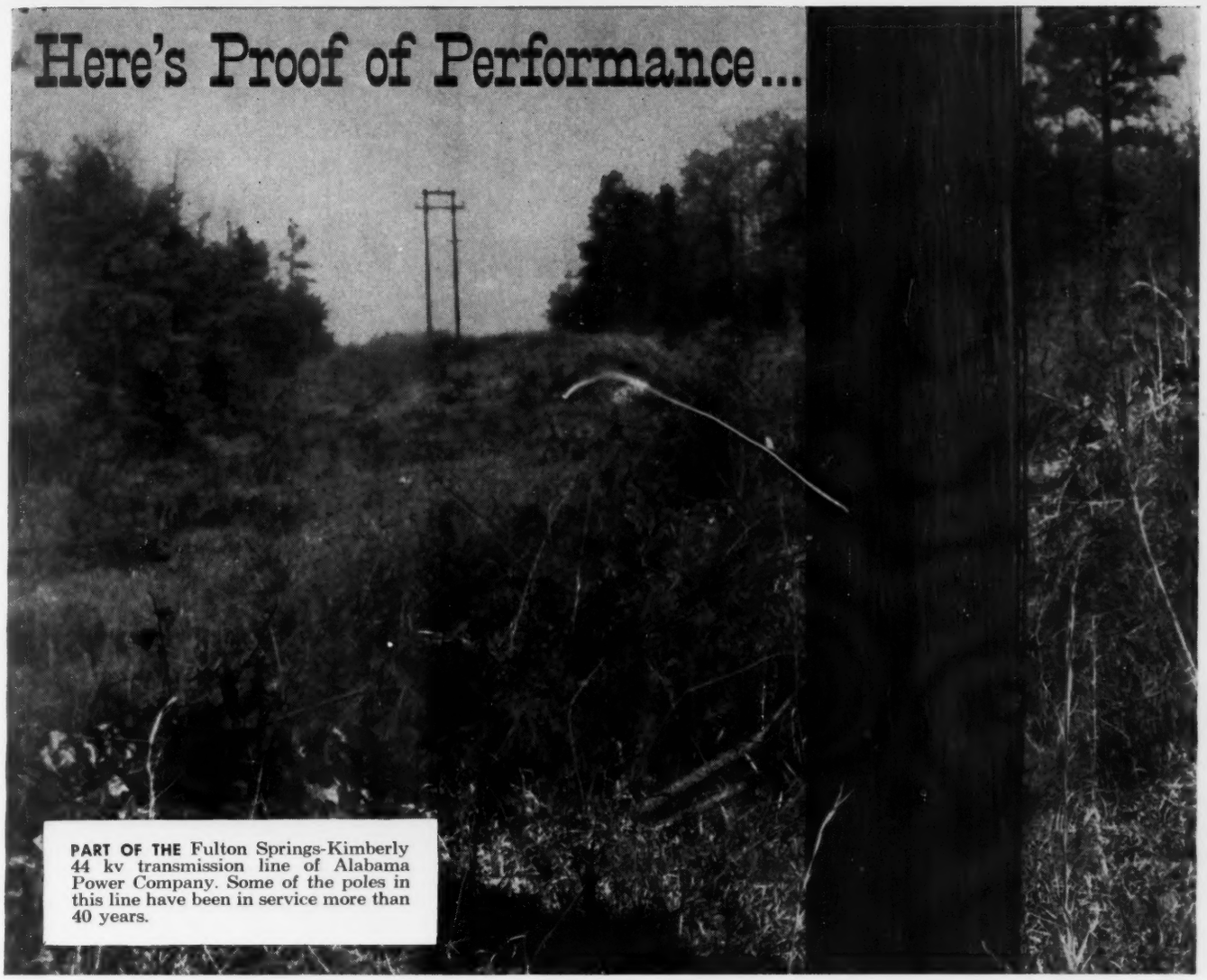
Indiana Telephone Association, Claypool Hotel, Indianapolis, May 11 and 12.

The Illinois Telephone Association, Pere Marquette Hotel, Peoria, May 19 and 20.

Pennsylvania Independent Telephone Association, Pocono Manor Inn, Pocono Manor, June 1 and 2.

New York State Telephone Association, Scaroon Manor Hotel, Schroon Lake, June 13, 14 and 15.

Oregon-Washington Independent Telephone Association (joint convention). Olympic Hotel, Seattle, Wash., June 17 and 18.



PART OF THE Fulton Springs-Kimberly 44 kv transmission line of Alabama Power Company. Some of the poles in this line have been in service more than 40 years.

Pressure-creosoted poles in this transmission line have been in service more than 40 years

• Alabama Power Company's Fulton Springs — Kimberly 44 kv transmission line today includes more than 100 pressure-creosoted poles that originally went into the ground in their present locations in 1914—more than 40 years ago.

Originally a radial feeder, the line was constructed with approximately 600 pressure-creosoted poles. In 1924, the line was rebuilt with span lengths increased. At that time more than 200 of the original poles were re-used in other locations.

Over the years replacements have been made in the original group of poles, with deterioration accounting for a very small percentage. But 109 of the original poles are still in service on the Fulton Springs-Kimberly line.

Alabama Power Company has been using pressure-creosoted southern pine poles almost exclusively since 1920. With timber and treatment in accordance with current specifications, normal life expectancy from pressure-creosoted transmission poles is at least 40 years.

JUST ANOTHER EXAMPLE

. . . of the effectiveness of pressure-creosoting in lengthening pole life and reducing replacements. And for the best performance from pressure-creosoting, be sure USS Creosote is used. For more information on this effective wood preservative, contact our nearest Coal Chemical sales office or write directly to United States Steel Corporation, 525 William Penn Place, Pittsburgh 30, Pa.

USS CREOSOTE

5-23

SALES OFFICES IN PITTSBURGH, NEW YORK, CHICAGO, CLEVELAND, SAN FRANCISCO AND FAIRFIELD, ALA.

UNITED STATES STEEL

Extras Pay Off In

TOO OFTEN employe selection is made on the basis of conventional job requirements. However, looking for "something extra" is well worthwhile.

COMPANY success depends upon the ability of every employe to make the work he does profitable for the firm.

EVERY employe is a representative of the company for which he works. His attitude can help or hurt his employer.

"NINETY PERCENT of your employe troubles can be eliminated at the time you hire them," an expert told a group of business men recently. He was so right; making certain we pick the right person in the first place is the best and finest labor relations policy we can have.

That's never an easy job for any telephone company executive who must do a hundred things at once. But its value is so great in warding off future troubles that seeing to it "something extra" is looked for at the time of hiring any employe is well worth while.

All of us are familiar with conventional requirements of each job in our business. Too often we make employe selections on a basis of these only where a number of "extras" should be considered.

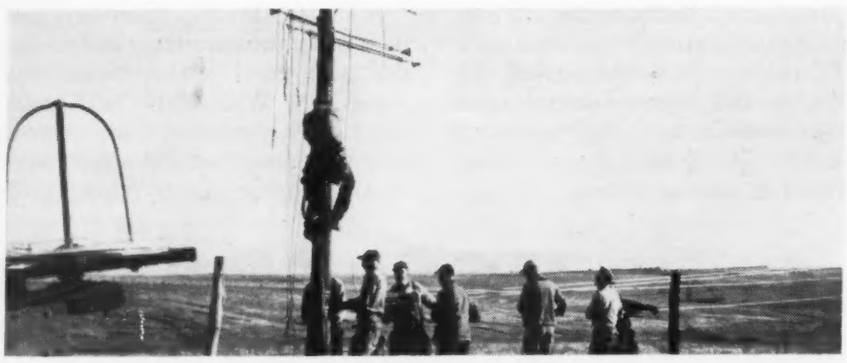
Many firms have spent hundreds of dollars in research setting up such standards to go by. What they have learned can be used by every telephone company executive to make certain each new employe he hires is the best possible person for the job. From the best of these here are a number of things we should look for.

Productivity: — The success of our business depends upon the ability of every employe to "produce" or make the work he does profitable for the firm. From the start we should look for this understanding. It should be emphasized again and again that the pay check of each individual depends entirely on that individual's productivity on his or her job.

That calls for the new individual being shown at the very start how to do his or her job properly.

Goodwill Building: — Every employe is, in a sense, a representative of the company for which he or she works. The attitude toward their employer they display among their friends after work hours is mighty important.

Loyalty to the firm and a constant desire to build goodwill for that firm is something every employe owes his



NINETY PERCENT of employe trouble can be eliminated by making certain each new empioye is the best person for the job.

In Employe Selection

By ERNEST W. FAIR

THE PAYCHECK of each worker depends on the worker's productivity on his job.

or her employer; that also should be understood not only from the very start but all through employment.

Taking Care Of Equipment: — The business itself and the equipment therein are partners with each employe in earning the pay check that employe receives. When he understands this from the very beginning he is always a better employe in all ways. He must be made to understand that he owes it to the firm to take care of every piece of equipment he uses on the job.

Maintenance costs can be reduced in any business where employes are made and kept aware of the importance of their attention to this factor.

Co-operation: — Strife in any organization means an inefficient organization where no one can do their best. The person who does not understand this co-operation should not even be considered for a trial period.

This co-operation is the sort that extends not only to getting along with one's fellow employes but also in conforming to the rules and regulations laid down by the company. It's something we have a definite right to expect of every person we hire to work in our business.

Loyalty: — Some individuals are possessed of the ability to be loyal; others do not have it and can seldom be educated to it. The former we want very much with our firm . . . the latter we should avoid like the plague.

A disloyal employe can cause more trouble for any firm than bad service. The loyalty of every employe to the employer is a must. There should never be a place in any firm for a disloyal employe no matter how skilled that person may be.

Attention to this begins with first employment in weeding out the individual incapable of loyalty to anyone or anything. And it continues through future employment for it is not something that can be taken for granted.

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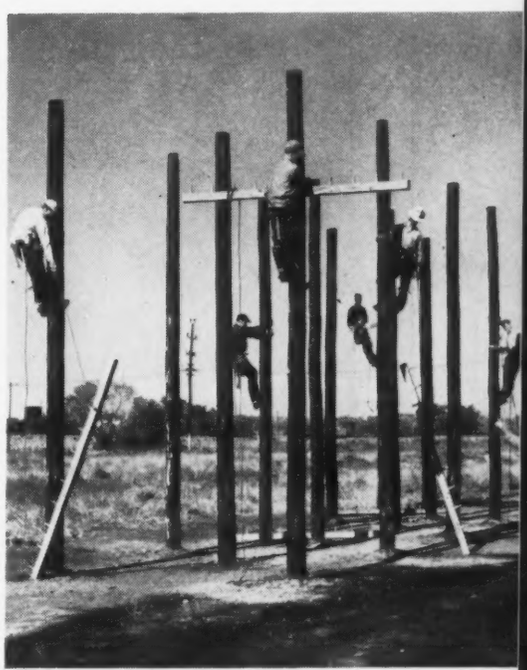


THE NEW employe must be carefully trained on correct job performance methods.

COOPERATION extends not only to getting along with fellow employes but also in conforming to all established company rules and regulations.

Planning and Construction of

Local Line Plant In England

By R. G. TUNGATE

IN PART TWO of his discussion of England's local line plant, Mr. Tungate describes — (A) Development Scheme Plans; (B) Underground Duct; (C) Buried Jointing Points; and (D) Construction of Cabinet and Pillars. Part One of this article appeared in Dec., 1954 TELEPHONE ENGINEER & MANAGEMENT.

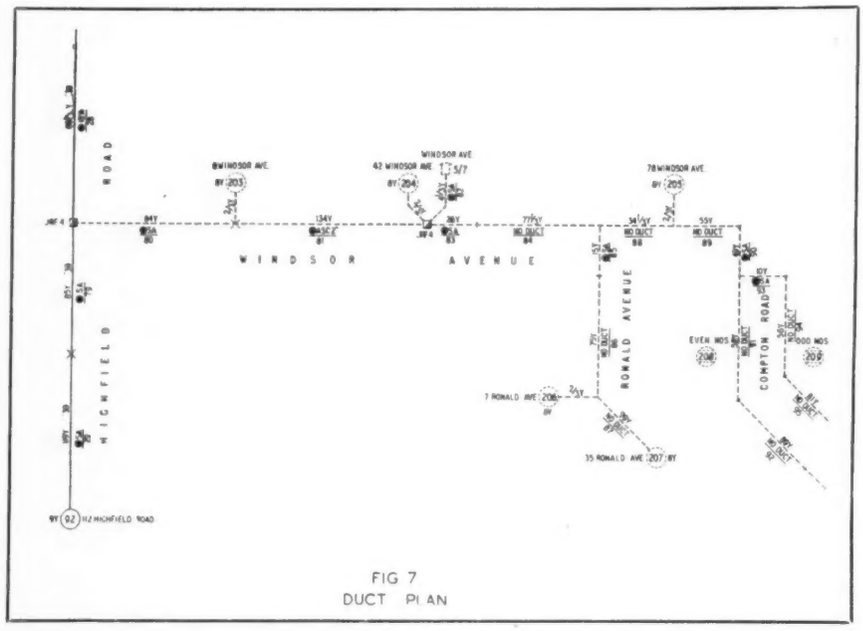


FIG 7
DUCT PLAN

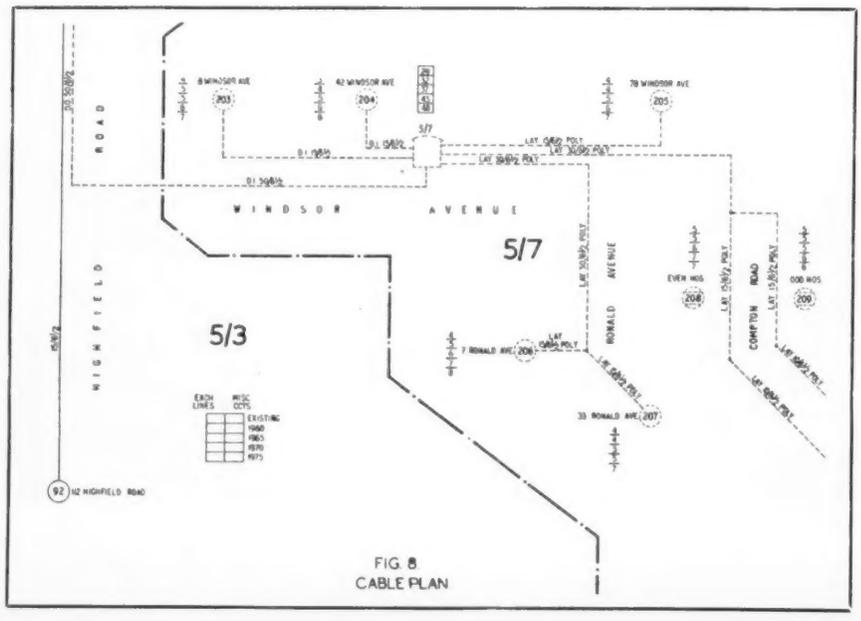


FIG 8
CABLE PLAN

THE PLANS relevant to a particular development scheme are as follows:—

(a) *Key Plan*: A map showing the territory affected.

(b) *Straight Line Diagram*: This is a modified version of that shown in *Figure* 4, omitting deferred cable proposals, and showing only existing plant and details of the work it is proposed to undertake immediately.

(c) *Development Scheme Map*: Proposals affecting recovery or provision of plant are superimposed on a map. *Figure* 6 shows part of a hypothetical exchange area, and relief measures have been indicated.

(d) *Duct Plan*: This is a schematic plan showing existing and proposed ducts, manholes, etc., with identification numbers, and indicating lengths of the various sections as shown in *Figure* 7. The plan is not always required for small schemes when the necessary information can be shown on the development scheme map described above.

(e) *Duct Space Record*: This gives particulars of the types and sizes of cables occupying various bores in multiway duct between specified points.

(f) *Buried Joint Boxes and Couplings*: These are diagrams recording the location and depths of buried jointing points.

(g) *Cable Plan*: An example is shown in *Figure* 8.

(h) *Jointing Diagrams*: As shown in *Figure* 9, this is a schematic plan showing the distribution of cable pairs and is intended for the instruction of jointers carrying out the work. The figures at the DPs represent the distribution-side pair

FIG. 6
DEVELOPMENT SCHEME MAP

numbers at the pillar to which the DP is connected.

Duct

A VERY EXTENSIVE network of underground duct exists in Britain. The greater part of local line plant distribution is provided underground, the overhead portion being limited, as far as possible, to the provision of distribution poles to provide drops to subscribers.

The most commonly used duct is self-aligning salt-glazed earthenware, having spigot and socket joints lined with a hard tar-like composition.

A cross-sectional view of single way duct is shown in *Figure* 10. The diameters of single way duct are 3″, 3⅜″ and 4″ while 2, 4, 6 and 9 way multiple duct is available with 3⅜″ bores. Earthenware ducts are normally laid at a depth of 18 inches under footways and 24 inches under roadways. Bends are available but the spigot and socket joint also allows slight deviations to be made.

Ease of deviation is an important factor due to the winding nature of the roads and to the congestion caused by the presence of other services. Steel and cast-iron pipes are used under special circumstances, and use is also made of 2″ and 3″ asbestos cement ducts jointed with either a rubber collar or with an asbestos cement collar and rubber rings. When more than nine conduits are needed along a congested route, octagonal clay ducts having a circular bore and an octagonal exterior, are generally used. They are butt-jointed and embedded in concrete to the desired number and formation.

Jointing Points

BURIED jointing points are provided in some circumstances, the most commonly used items being split concrete couplings for either through or branch joints. Buried joint boxes made up of pre-cast concrete slabs are used on two or three way conduits. A large proportion of surface joint boxes is in use; these are normally constructed of re-inforced concrete and are provided with covers for either footway or roadway as required.

Standard designs of rectangular or triangular manholes are employed, normally constructed of re-inforced concrete. A type of manhole cover which is in general use is shown in *Figure* 11. The frame is of hollow section and, together with the cover, is filled on site with concrete. The seatings are a machined fit, and the cover is designed to slide out of the frame. Special lifting keys having a jacking action are employed as shown.

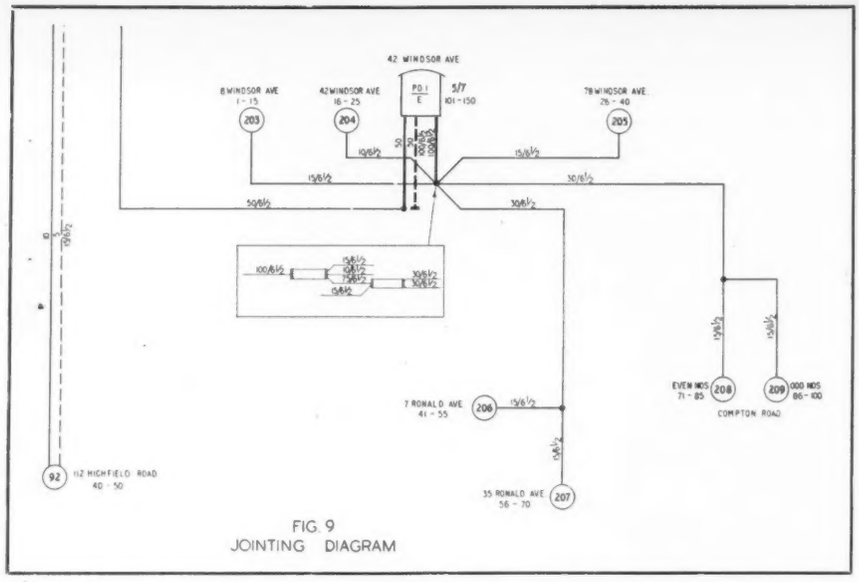
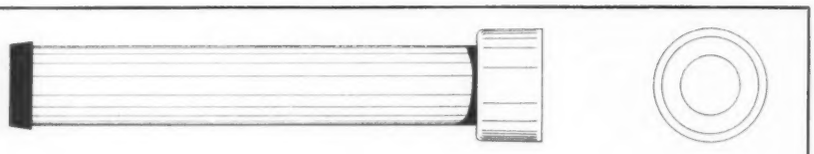


FIG. 9
JOINTING DIAGRAM



SINGLE WAY SELF ALIGNING DUCT
FIG. 10

Lead Covered Cables

THREE MAIN types of air-spaced, paper-cored, lead-sheathed cables are used. These are "twin distribution" for up to 15 pairs, "quad local" for 20-1400 pairs and "unit twin" for 50-1800 pairs. The quad local type is now becoming obsolete for local line work and is superseded by the unit type.

The normal means of pair identification is by groups of printed lines (1-4) on the paper insulation, the color of the lines differentiating between adjacent layers, and between marker pairs and the remainder. Blocks of pairs are easily identifiable in the unit type cable, each unit consisting of from 20-100 pairs depending upon the size of the cable.

FIGURE 11: — Manhole Frame and Cover.

For use in areas affected by corrosion, hessian taped or rubber-wax coated cables are in use, although the effect of electrolytic corrosion is now lessened by the use of insulating gaps or cathodic protection.

Polythene Cable

POLYTHENE sheathed, polythene insulated cable is now coming into general use for distribution cables. It is primarily intended for burying direct in the ground, though this does not preclude its use in ducts, or for cabling in or on buildings or for aerial cable. It is recommended for use when providing:—

(a) Direct underground distribution in residential districts, or buried distribution cables feeding DPs.

(b) Underground power crossings or insulated aerial cable power crossings.

(c) Temporary circuits required in connection with outside

broadcasts, field events, etc.

(d) Lead-in cables to power stations and high-voltage substations when heavy earth fault currents may be experienced.

Each conductor is identifiable by means of the colored polythene insulation to a color scheme (10 colors) and the core of the cable is formed of layers of conductors with alternate clockwise and anti-clockwise layers. Each layer is given an open helical lapping of thin polythene tape. An aluminum foil electrostatic screen is provided over the completed core, and the polythene sheath contains carbon black.

A novel method of jointing the cable is employed, using expanding rubber plugs. These consist of an outer and an inner metal pressure plate on either side of a circular rubber plug containing a number of holes corresponding to those in the pressure plates. The pressure plates are pulled towards each other by means of bolts, causing the rubber component to expand inwards against cables passing through the holes, and outwards against a lead or plastic sleeve.

Several different sizes of expanding plugs are available having various combinations of holes of different diameters. Spare holes not required to accommodate cables are plugged with short lengths of plastic rod. A re-inforcing collar is used on the outside of the lead sleeve to prevent the sleeve from spreading when the plug is tightened. Expanding plugs can be provided at each end of a sleeve to form a through joint or at one end of a capped sleeve to form a "U" joint.

During cabling operations on direct underground local line distribution schemes, a loop of cable of about 1 yard in length may be buried at selected points, normally outside each house, so that joints for the purpose of connecting up new subscribers may be readily constructed.

When a joint is to be made, about 10 inches of the cable sheath is removed and the exposed pairs bent to form a "U." The pairs are fed into the holes in the inner and outer pressure plates through slots provided for the purpose and are fed into the rubber component, through a cut made between two of the holes in the component. The small one or two pair cable to feed the subscriber is jointed to a pair or pairs in the frontage cable but through pairs in the frontage cable are left undisturbed. See *Figure* 12.

Generous provision of cable pairs is made where underground distribution by cables buried direct in the ground is used, thus avoiding any need to augment the cable at some later date. However, as the cable is laid at shallow depth and the cost of duct is avoided altogether, the economics of this type of service compare favorably with the cost of overhead distribution in many cases.

Construction of Cabinets & Pillars

CABINETS are designed to be air-tight, and the door or doors close on rubber seals in the case iron frame. The cable entry ducts in the bases are sealed, and silica gel desiccators are provided to maintain a dry condition inside the cabinet. Pillars are fitted with an air-tight metal cover while the outer cover is made of asbestos cement which does not require painting. The cabinets are normally painted green. Cabinet and pillar terminal assemblies are fitted with 15 ft. cable tails for jointing into the cable network. The cabinets and pillars are sited to be as inconspicuous as possible, and generally very little opposition to their erection is experienced. — *Part Three of this article will appear in the February issue of* TELEPHONE ENGINEER & MANAGEMENT. *Part One was published in the December,* 1954, *issue.*

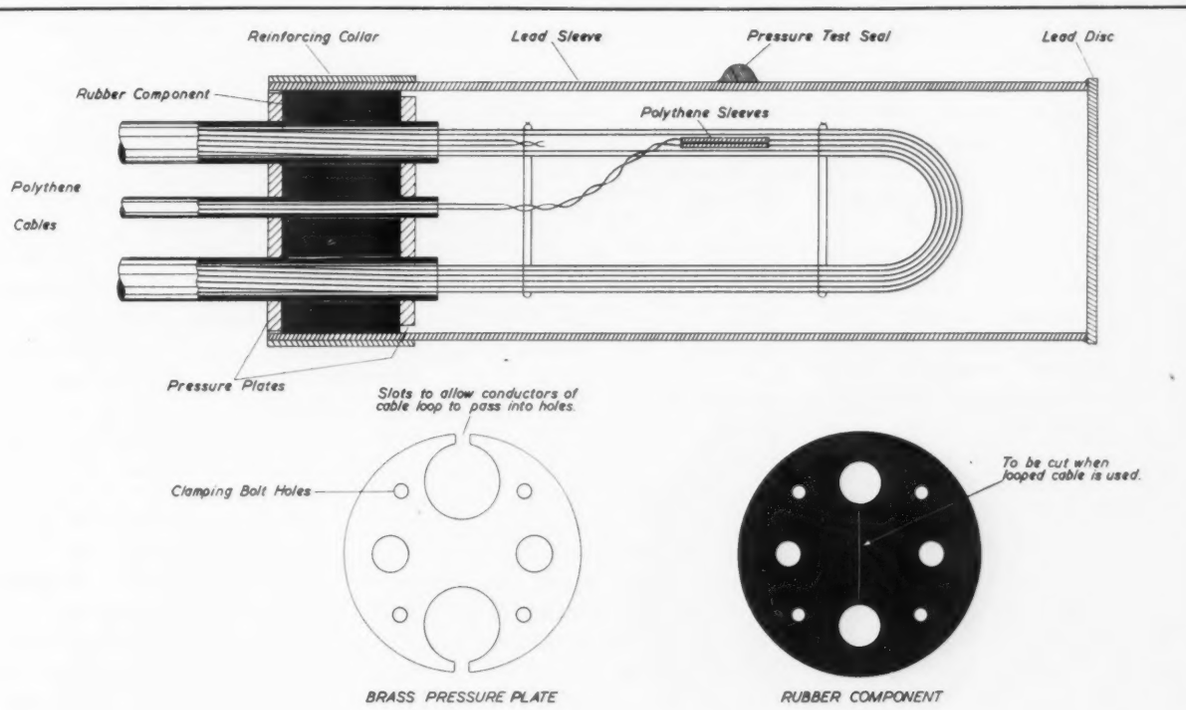
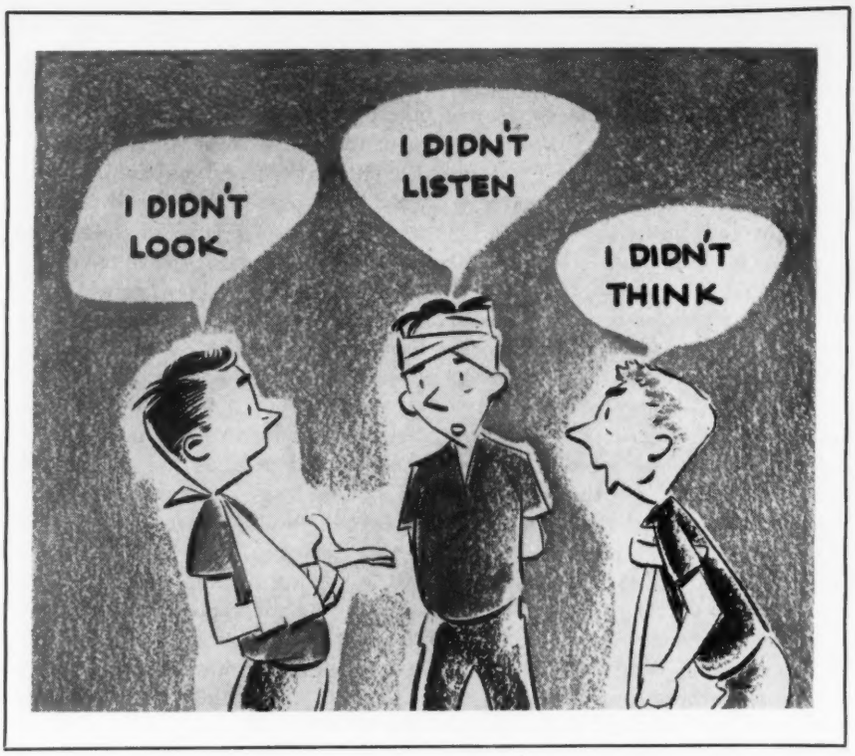


FIG. 12.
POLYTHENE CABLE JOINT



Small Plant

Health & Medical Programs

THE HEALTH of your workers is a key to greater profits from your operations. A consistently healthy work force leads to greater productivity, lower labor turnover and training costs, and better employe morale.

THE HEALTH of your workers is a key to greater profits from your operations. A consistently healthy work force leads to greater productivity, lower labor turn-over rates and training costs, reduced workmen's compensation costs, and better employe morale. In-plant health programs frequently save much more than they cost every year.

In setting up your in-plant health program, it is important to get accurate information and qualified assistance. The program must be tailored to the individual business situation. Numerous sources of information and guidance are available, both locally and nationally.

Employers are helping to maintain worker health in several ways. They make both direct and indirect payments for community health services. Some contribute to, or pay the entire cost of non-profit hospital and medical organizations or commercial group insurance contracts which help cover the costs of surgery and hospital bills. Others also provide in-plant health programs. This article deals with services which are provided at the work place.

What Are In-Plant Health Services?

IN-PLANT HEALTH services are of two major types: (1) those given in connection with occupational accidents and illnesses, and (2) those not directly associated with the occupation, but provided to improve the worker's health and to keep him on the job. The first kind of service is furnished as a means of meeting the employer's legal responsibility. The second kind is offered because employers have found that it pays to maintain and safeguard the health of their workers.

The extent to which companies provide health services directly related to the occupation depends mainly on the degree of hazard in the particular industry. The extent to which a company provides health services for non-occupational conditions is, however, a matter of company policy.

What Are The Advantages To Management?

MANY EMPLOYERS have found that the reduction in worker absense, the decrease in workmen's compensation costs, the lessening of labor turnover, and particularly the improvement in employe morale, have more than paid for the cost of medical programs.

One plant, for example, saved $3,500 through reduced absenteeism in the first year after an annual operating cost of $1,700. Another company with 300 employes reduced workmen's compensation costs from $18,000 to $7,000 per year — a 61 percent decrease — by the establishment of an in-plant health program. In still another small concern, compensation insurance premiums were reduced by 24 percent between 1946

(when the company introduced its medical service) and 1950. This was possible despite increased costs resulting from changes in the state workmen's compensation law.

Another advantage to management is illustrated by the experience of a plant with about 250 workers — the majority of them women — in which the labor turnover was reduced from an average of 15 per month to less than 5 per month shortly after a nurse was employed.

Where Are In-Plant Health Services Found?

ACCORDING TO A recent survey of its member companies by the National Association of Manufacturers, less than five percent of companies with under 250 employes had arrangements for a nurse or physician to provide care in the plant at specified times. Of plants with 250-500 employes barely 33 percent had a nurse in attendance, and only 16 percent had arrangements with a physician to give care on a specified time schedule. Almost none of the plants of this size hired a physician full time.

Studies show an overwhelming lack of health services in small plants. Striking differences in the variety of services provided also heighten the contrast between small and large plants. Small companies tend to provide fewer pre-placement and periodic examinations, less consultation service, and less treatment for minor on-the-job illnesses. Furthermore, in small concerns fewer plant health services are conducted by physicians.

Although health programs benefit factories of all sizes, most small plants have a more pressing necessity for such services. Statistics show that, by and large, small plants have 2½ times as many accidents as large ones, in proportion to the number of employes. A similar comparison of the general health of workers in small plants is not possible because of the absence of complete data. However, experience indicates that workers in small plants are not in as good general health as those in large plants.

How Are In-Plant Health Services Provided?

DEPENDING UPON the size of the plant and the scope of the program, various combinations of

full-time and part-time health personnel may be found. Large firms ordinarily have fulltime physicians, nurses, and auxiliary personnel. Medium-sized plants use either full-time or part-time physicans, but generally have a full-time nursing staff. Typically, the few smaller companies offering in-plant health service engage physicians to visit the plant a specified number of hours a week. Generally, they have either full or part-time nurses. In many instances, the full-time nursing service is provided by a visiting nurse association.

Many small plants arrange for what are known as "on-call" physicians who may be summoned to the plant whenever an emergency arises. Although their services are generally limited to emergency care, some on-call physicians also give preplacement examinations in their own offices. This sort of arrangement, however, does not permit first-hand familiarity with health conditions in the plant, or with the special problems of individual employes. Moreover, it does not make regularly available the services of a physician for consultation, diagnosis, and prevention of illness. The inadequacy of this kind of approach has been pointed up both by the Council on Industrial Health of the American Medical Association and by others specializing in the field of occupational health.

The services of a plant's medical staff are frequently augmented by community health activities. For example, through the facilities of the local tuberculosis association or local health department, mass chest X-ray surveys are regularly conducted in many plants. Health education activities in the plant may also be strengthened by assistance from such organizations as the National Cancer Society, the National Heart Association, and similar voluntary groups.

When prepaid hospital and medical services are available, they may also be integrated with the in-plant program. Both can be particularly valuable when an employe needs hospitalization for a non-occupational accident or injury.

What Services Are Offered?

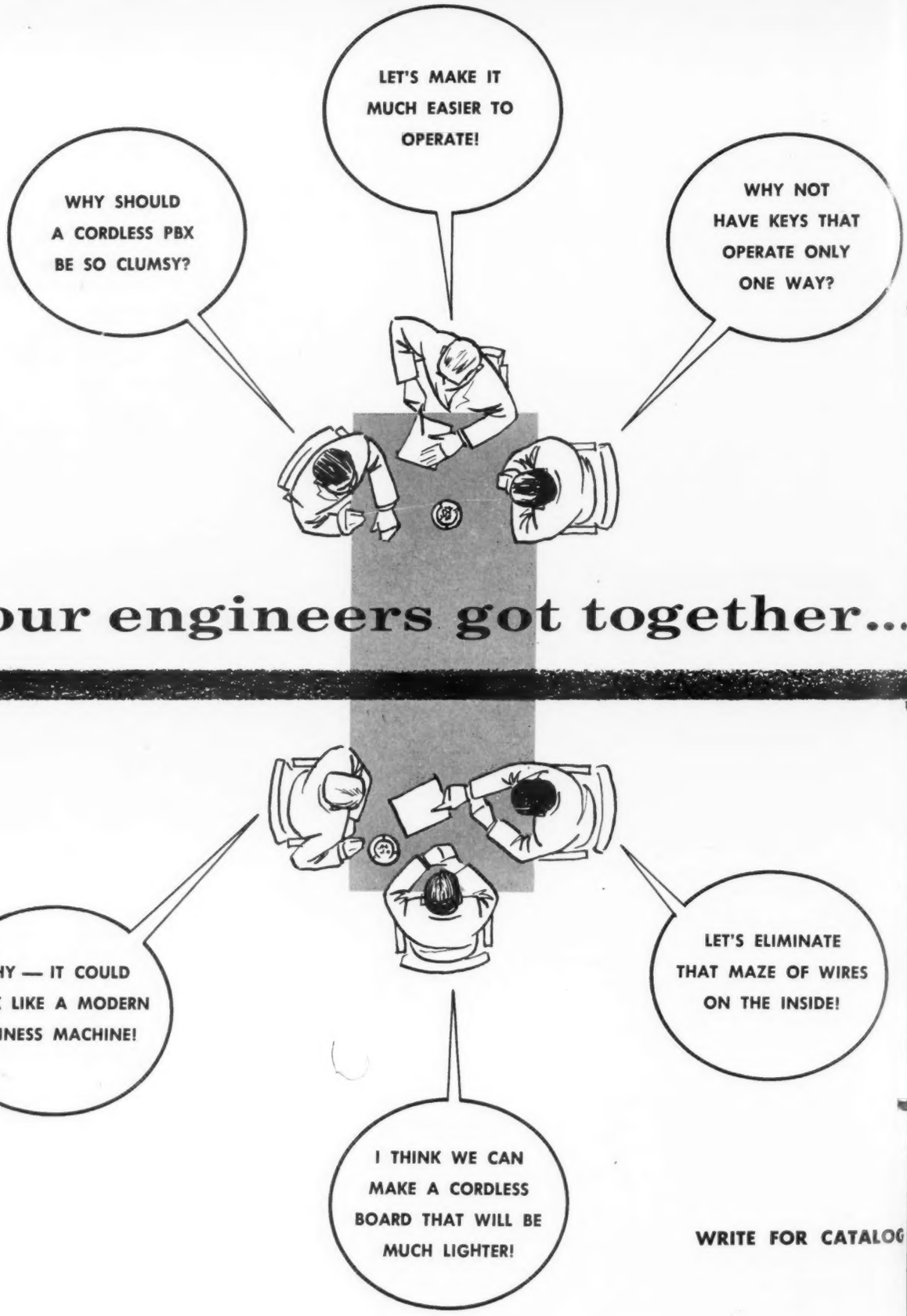
TWO DIFFERENT kinds of services are found: *Occupational services*: Under workmen's compensation laws, employers are liable for illnesses and injuries incurred by workers on the job. Consequently, some of the large firms have found it desirable, from the standpoint of both money and time to provide complete care for minor cases. That solution has proved generally acceptable to the workers, who, under many State laws, have the privilege of selecting the physician who is to care for occupational diseases or injuries. All serious cases are, of course, treated in hospitals.

Non-occupational services: Less than 10 percent of sickness absenteeism is caused by occupational disease and injury. Many companies, therefore, have recognized the value of providing diagnostic and preventive care. These services, aimed at improving and protecting the general health of the worker, tend to remove the causes of the remaining 90 percent of absenteeism.

Preplacement and periodic examinations are the heart of the non-occupational services offered in a plant. Preplacement examinations serve two purposes, wise assignment of the worker and early detection of illness. Periodic examinations provide a current health inventory contributing to discovery of disease while in its early stages.

In addition to such examinations, some plants also give emergency treatments and care for minor ailments in order to help keep workers on the job. If further treatment becomes necessary, however, patients are referred to their family physicians.

Close personal contact and smooth working relationships with family physicians are important features of in-plant health programs. In addition to explaining the findings of pre-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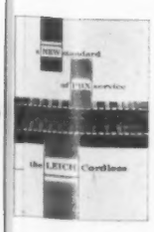

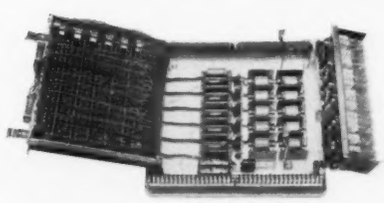

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GENERAL SYSTEM

placement and periodic examinations to the workers, the plant medical staff, with the workers' permission, passes the information on to the family physicians, whom the workers are urged to consult. In this connection, one of the major duties of a plant nurse should be to follow up such referrals and encourage workers to get the needed treatment. In many instances, at the request of a family physician, various special services have been provided for a worker right at the plant.

A continuing health education program carried on in the plant can demonstrate to the workers the value of accepted health practices. Such a program inspires worker acceptance of healthful habits and willingness to obtain any necessary treatments. In the course of periodic conferences with the plant physician and nurse, advice may also be given to the workers on health matters affecting their own health and that of their families.

What Do In-Plant Health Services Cost?

MANIFESTLY, costs vary from company to company, depending upon such factors as the type of industry (hazardous nature of operations); the size of the industry; the type of services to be provided; the availability of medical personnel; and the degree to which community facilities can be utilized.

The skill with which the program is designed to fit the needs of the individual company is vitally important. By way of illustration, an insurance company executive recently told of a case in which a plant with 600 employes, which spends about $5,000 per year on its medical program, saved approximately twice that sum during the first year its plan was in operation. This company's plan was developed specifically for the needs of its plant. In contrast, another plant with 6,000 employes spends $47,000 per year on a medical program from which neither management nor employes derive much benefit because the program was not suitably planned and has grown haphazardly.

How Are In-Plant Health Services Set Up?

LARGE COMPANIES can afford to set up their own in-plant health departments and to hire either a part or full-time physician and full-time nursing staff. Smaller companies, however, generally do not find it feasible to set up elaborate full-time programs — they cost too much.

Companies with less than 500 workers can best approach the problem of providing satisfactory health services through a cooperative arrangement with other companies. Several successful programs of this type have been developed. They are of two general types. Some groups of small companies jointly establish a central clinic to serve employes of all participating firms. Other groups of small companies prefer to employ a physician who serves each company on a part-time rotating basis.

Details concerning the development of such programs, the early promotional activities; the planning for layout, needed facilities, and equipment; the employment of medical personnel; the relationship between the companies; and other administrative details, as well as figures on costs and savings, are contained in the recent Public Health Service Publication No. 215, *Small Plant Health* and *Medical Programs.*

This Public Health Service publication points out that there are no 1-2-3 steps that can be outlined for the promotion and organization of cooperative health programs. A review of the plans described shows that in one instance a physician was interested in providing services to small companies and was primarily responsible for developing the program. In another case, an industrialist was convinced of the value of medical services and sold the idea to other small companies. In a third community it was the local health department which took the initiative. In a fourth, it was the local chamber of commerce which stimulated the development of cooperative health services.

There are, however, certain essentials for success in a health and medical program. Experience has proved that to be successful, a program must have first, the good will and strong backing of management. Second, there must be a complete understanding by the employes of the purposes of the program. Third, the program must have the services of a competent physician who is actively interested in worker health. Finally, the company must have a clear appreciation of its financial responsibility toward the program and of the services to be provided under it.

Who Can Help In Establishing Programs?

COMPANIES interested in establishing in-plant health programs can obtain assistance both from local and from national sources. Locally, they will find it helpful to consult the health department; the medical society, especially its committee on occupational health; the chamber of commerce; the medical school, if there is one; the council of social agencies; the visiting nurse association; and those concerns which already have medical departments staffed with a physician and nurse.

They will also find it worthwhile to consult with the several national organizations having a primary interest in the establishment of occupational health programs. Most of these organizations have excellent literature available for free distribution; some provide personal consultation service. These organizations have developed standards for service, suggestions as to types of personnel best suited to operate small plant health programs, and criteria for evaluating the programs. Titles of their publications and places where they may be obtained are listed in Public Health Service Publication "Small Plant Health and Medical Programs," referred to previously.— *Adapted from a report issued by the Small Defense Plants Administration.*

EDITOR'S NOTE: — *For other articles on this series refer to*: *"Reducing Accident Costs Through Safety Committees," page* 48, *July*, 1954 *issue of* TELEPHONE ENGINEER & MANAGEMENT; *"Reducing Accidents Through Safety Work Methods," page* 72, *August*, 1954, *issue; and "Reducing Accident Costs," page* 73, *November*, 1954, *issue. A few copies of these issues are available. Let us know if you need extra copies for your reference file.*

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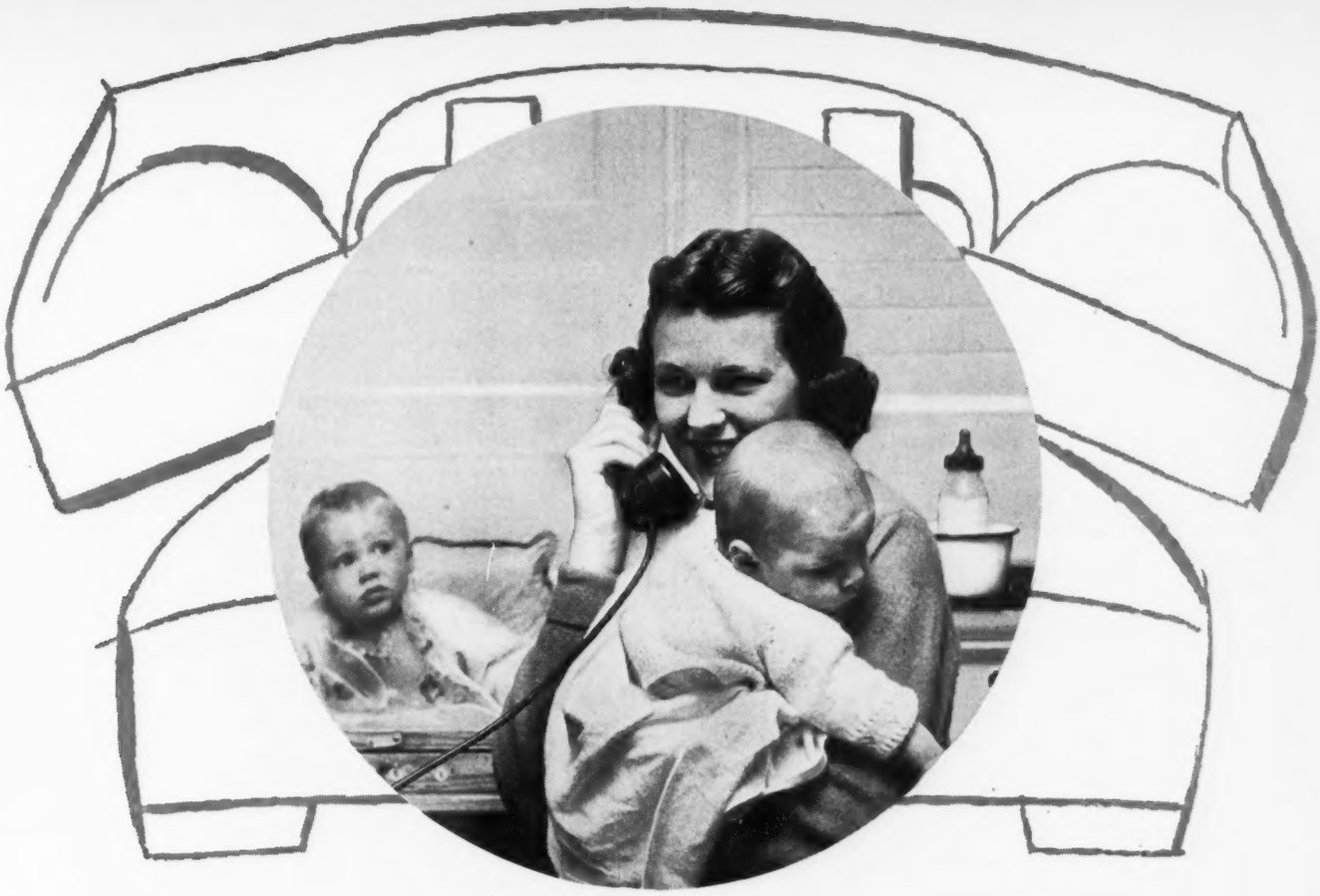

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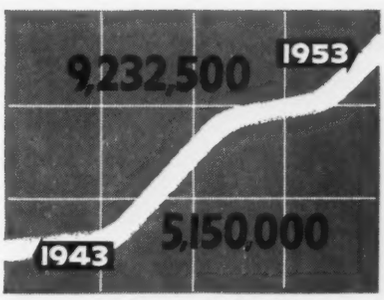

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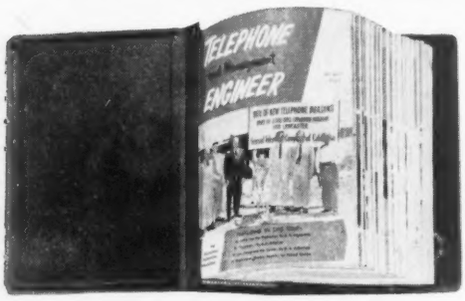

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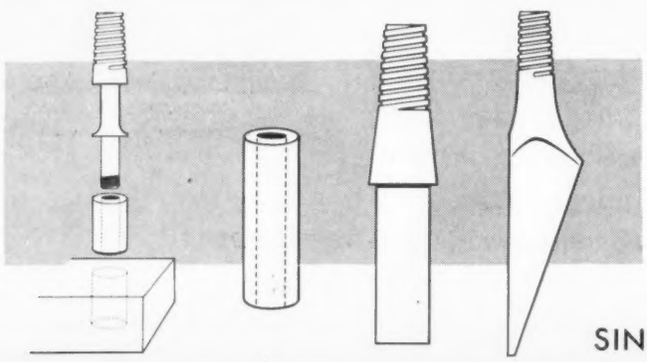

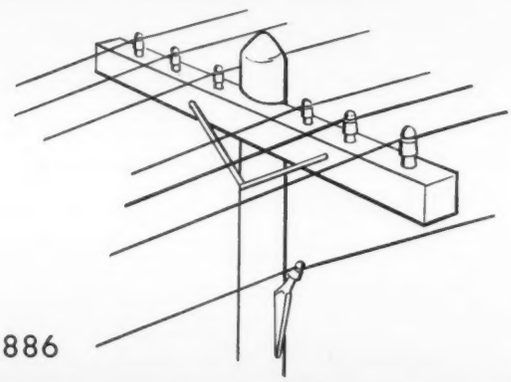

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Designing Modern Communication Lines

By J. N. PETRIE*

PART V of Mr. Petrie's article discusses the general requirements for laying out carrier transpositions. Part IV of this article appeared in the December issue.

THE COMMENTS which follow cover the general requirements for laying out carrier transpositions. The general principles referred to herein should be followed in locating the transposition poles on any open-wire line that is to be utilized for trunk or long distance circuits in connection with the retransposing or the original design of transposition patterns for new construction.

The general requirements outlined herein can be applied to any or all of the various transposition systems or patterns discussed in the previous section. It must be recognized, however, that insofar as more lenient characteristics are acceptable in connection with types of carrier systems equipped with compandors, to that extent these instructions may be relaxed.

General Requirements

TRANSPOSITION patterns used heretofore and referred to as "voice-frequency" patterns, "3 kc" patterns or "exposed line" patterns, in general, will not be suitable for use with carrier current systems operating at frequencies above 35 kc. These systems are installed extensively on the existing lines utilized by many companies and, insofar as they serve the purpose, have been utilized satisfactorily for various low frequency carrier systems up to 35 kc, but in general their use at frequencies in excess of 35 kc will be undesirable, if not completely impossible, except for temporary or emergency applications.

The various comments herein, together with the limits set up, in general are to be applied to carrier transposition patterns of the various types referred to in the previous section and are to be adopted in connection with the installation of any two or more carrier systems operating in the same frequency band on the same pole line if they involve frequencies in excess of approximately 40 kc.

It should also be noted that wherever lines are rebuilt or poles are being replaced in such lines, efforts should be made to secure locations for the transposition poles conforming to the needs of the transposition layouts involved.

Locating Transposition Poles

THE EFFECTIVENESS of any carrier transposition system depends to a considerable degree upon the accuracy (in length) of the transposition intervals. Unless the intervals between transpositions are uniform within the design limitations, the overall crosstalk is likely to be sufficient to seriously impair the operation of the carrier current facilities superimposed thereon.

The degree of uniformity in the transposition layout achieved (between successive "S" poles) depends largely on the spacing of all the poles in the line and their relationship to the desired length of transposition intervals. On new lines where the pole spacing was planned with the transposition pattern in mind the results achieved may be considerably better than on old lines where the poles were located to meet construction requirements without regard to the transposition pattern involved unless in this latter case "floating" or "mid-span" brackets are used as required to secure the specified accuracy in intervals.

It is frequently practical to lay out a voice-frequency transposition pattern without regard to the number of poles per mile or their uniformity of spacing within a transposition section; such methods will normally not be sufficiently uniform when high-frequency carrier transmission is contemplated. When a carrier transposition pattern is being installed it is necessary to know the relative location of every pole in the line and, in general, all major discontinuities will need to be carefully considered and usually will affect the carrier transposition pattern. The laying out of the carrier transposition pattern usually requires considerable time and planning after the detailed information is on hand, in addition, it is usually necessary to have the complete transposition pattern for the whole line layed out before actual construction work is undertaken.

Since the carrier transposition pattern must frequently be installed on a line after the physical construction has been completed and, in fact, sometimes many years later, it will often

*Mr. Petrie is Manager, Carrier and Radio Sales, Automatic Electric Sales Corporation.

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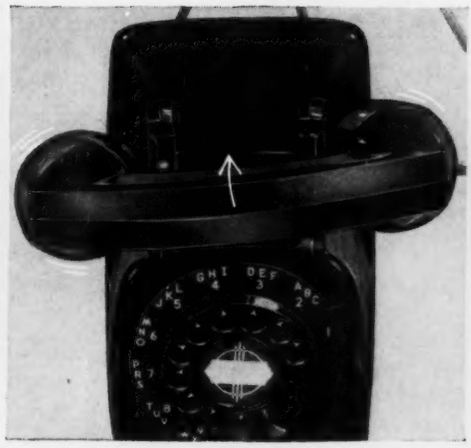

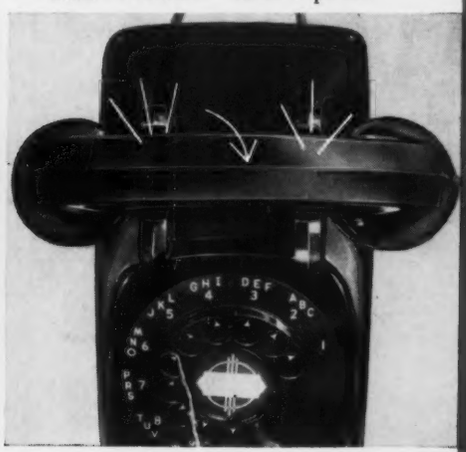

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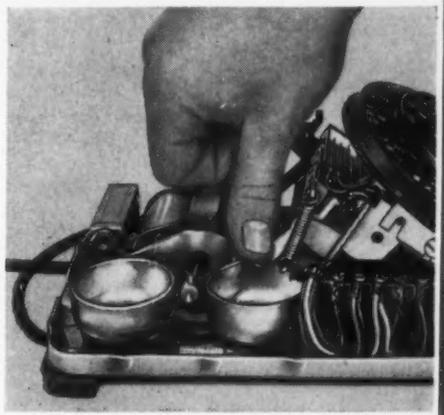

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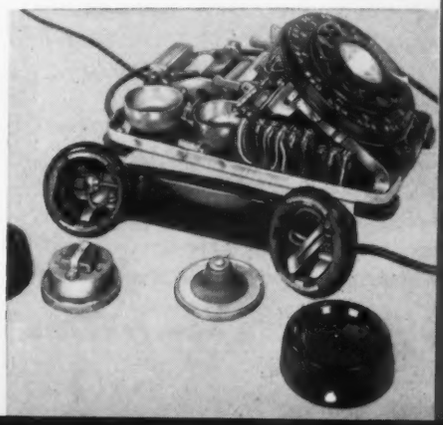

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be found that the pole spacing will deviate sufficiently to preclude the installation of transposition brackets at the optimum locations unless the mid-span or the "floating" type bracket is resorted to.

"S" Poles and Junction Transpositions

TO SECURE the best crosstalk balance it is desirable to use the longer transposition sections wherever possible, and this will also tend to make it necessary to disregard certain relatively unimportant junctions.

A principal "S" pole should be established for the following categories of situations:

(1) The ends of a line.
(2) The ends of loaded or non-loaded cable.
(3) The ends of power exposures requiring inductive coordination procedures.
(4) Points where the carrier circuits may be patched, terminated or repeated, such as at test offices and repeater points.
(5) Junctions with other lines that affect the presence or pin positions of any other carrier current system.
(6) Junctions with other lines that affect the pin positions or presence of over 1/3 of the circuits on the line.
(7) Points where the line construction changes with respect to configuration of the line cross-section.

Special Construction Problems

A CARRIER transposition pattern will be no better than the precision with which the intervals are laid out. Probably the next greatest effect on the performance of a transposition pattern after the accurate determination of the transposition intervals and actual installing of the transpositions results from those factors that affect the conductor separation and the uniformity of sag as between the two wires of a pair and of the pair with respect to other pairs on the line.

Long Spans

IN THE PAST it has been the practice to install long span river or canyon crossings where it is impractical to follow the usual type of line construction. Also in these situations it often has been the practice to use wire spacings substantially different from the normal spacing. This type of construction will introduce an irregularity in the configuration and also may interfere with the normal installation of transpositions in the specified locations. These situations may result in excessive crosstalk unless special consideration is given to their elimination or proper treatment.

"You can always tell when a man's well informed. His views are pretty much like your own!"

Since long span problems usually involve situations other than those relating to transpositions, it is impractical to suggest procedures that can be applied generally with respect to transpositions under these conditions. In general, however, some of the factors outlined below will permit adequate solutions.

The wire configuration in the long spans should be normal for the line, or so proportioned with respect to the horizontal and vertical spacings as to give essentially the same coefficient of induction as the normal configuration would give. This may be accomplished for all practical purposes by keeping the ratio of horizontal to vertical conductor spacings the same for the long span as for the adjacent normal construction. In other situations consideration should be given to special construction that will permit the location of transpositions at the correct location in the span, or floating mid-span brackets may be utilized.

Special Crossarms

SPECIAL crossarms are usually employed extensively in situations where communication and power supply circuits are placed on the same pole lines. Since these special crossarms will alter the normal configuration of the line, they will affect the coefficient of induction, and therefore result in substantial crosstalk at the higher carrier frequencies. If the use of special crossarms under these situations cannot be avoided, every effort should be made to maintain uniform wire spacing and uniform spacing between the pairs on each side of the arms even if longer crossarms may be needed to accomplish this.

The Intermediate Cable Problem

THE TRANSPOSITION layout should always be arranged to avoid intermediate cables within any single transposition section. This requires that the cable terminals be "S" poles and that, in general, the cables be treated to avoid introducing undesirable reflection effects due to impedance irregularities. If intermediate cable is involved between two adjacent transposition sections the cable pairs should be so connected as to make the pin positions of the wires, both at the start of the transposition section and following the section of cable, the same as would have been the case if there were no intermediate cable and the appropriate "S" pole transpositions had been installed.

Vertical Separations Between Crossarms

FREQUENTLY the vertical separation between crossarms has been decreased to provide additional clearance above roadways or railroad tracks or for other reasons. While this is an economical expedient it affects cross induction adversely and the overall effect may be sufficiently serious to preclude satisfactory high frequency carrier operation where this technique is employed at numerous locations in a given section of line. From a practical point of view a 50% decrease in vertical separation between adjacent crossarms should not be made at more than one span in any 8 mile section of line, while two spans in each 8 mile length of line might be permitted under the same conditions if the decrease in separation did not exceed 25%.

The situation referred to above may occur only infrequently. A more serious condition is encountered in some situations where a vertical separation has been changed from a standard spacing of 24″ to 20″. On these lines a large number of situa-

tions may occur where the crossarm spacing will not be uniform throughout a line section until all the old poles, conforming to the 24″ spacing, have been replaced so all will conform to the new spacing. In some instances this deviation may be tolerated for a short period of time or until the maximum utilization of the line for carrier current systems is required. The ultimate solution will require adopting either one or the other spacing uniformly or at least throughout one complete carrier transposition section between adjacent "S" poles.

Irregularities Affecting Crosstalk Performance

A NUMBER OF unavoidable irregularities, such as minor variations in wire spacing due to variations of dimension of crossarms, insulators, and pole line hardware and the warping or misalignment of crossarms may add up to excessive proportions. This irregularity should be kept to a minimum to obtain the maximum benefits from the transposition pattern installed. Deviations of this type are especially severe at corners and hills or in situations where the crossarms in a curve or on the side of a hill are not at right angles to the direction of the wires.

Probably the most important spacing irregularity is due to variations in wire sag. Any difference in sag between the two wires of a pair will result in increased crosstalk, and the magnitude of the increase will be approximately proportional to the amount of sag difference. The crosstalk between two pairs in any given span will also be increased if the two pairs have different sags, although there is no difference in the sag of the individual wires of the pairs. This latter effect usually is not as severe as an equivalent difference in sag between the wires of a pair.

Inductive Coordination

IN GENERAL it is desirable to locate "S" poles at the beginning and ending of any inductive coordination situation. The application of carrier transposition patterns to a situation involved in existing inductive exposures frequently will tend to reduce appreciably the metallic circuit noise.

Installing Transpositions

THE WHOLE purpose of a transposition pattern may be defeated by omitting even one transposition per transposition section. Also the introduction of extra transpositions, where not called for, will frequently create as severe a crosstalk problem as the omission of a transposition. Considerable attention must be paid to maintain uniform spacing and uniform sag if the best performance of a transposition pattern is to be expected.

The drop bracket transposition arrangement ordinarily used for transposing voice frequency telephone circuits requires two spans for completing the interchange of position of the two wires of a pair. Throughout this two span section the two wires will have a varying and indefinite relationship to the other conductors on the line. The installation of carrier transposition patterns usually involves very short transposition intervals in which two spans may involve a large portion of the transposition interval, if they do not actually constitute the whole interval. The resulting non-uniformity between the various intervals is a major cause of crosstalk far in excess of the design values. It is therefore desirable with all carrier transposition patterns, and with some of the higher frequency systems it is mandatory, to utilize the "point" type transposition brackets that permit the interchange of the two wires within a matter of a few inches of the theoretically correct location of the transposition.

Several types of "point" transposition brackets possessing the necessary features are available, depending on the wire spacing, type of insulators used, and the type of crossarm mounting desired. Also the mid-span or floating type of transposition bracket is a point-type bracket. For the rare situation where phantom groups are carrier-transposed, considerable advantage will be obtained by using "point" brackets in the side circuits even though there are no "point" type phantom brackets available.

Crosstalk Control Measures and Equipment Design

IN THIS section are considered the general equipment application problems met when utilizing the Lenkurt Type 45A and 45C systems and other systems operating in this general frequency range. The Type 45A system is very similar to the W. E. Type J2 insofar as the transmission and application features are concerned. Both of these systems provide 12 two-way telephone channels on an open-wire pair in the general frequency range between 36 to 150 kc.

The specific applications pertaining to the two systems as well as the various frequency allocations are shown in the chart that follows. It also should be noted that the direction of transmission for the low-frequency group for systems of this type is normally the same as for the high frequency group of a 3-channel system such as the Lenkurt Type 32E or W. E. Type "C." This should not, however, be construed as precluding the possibility of reversing this direction of transmission under certain special conditions. The Lenkurt Type 45C system is essentially similar to the W. E. Type OB and the same transmission considerations apply to the two systems.

In considering first the type systems, such as Lenkurt 45A, it will be noted that specific assignment schemes have been worked out which in conjunction with the transposition patterns normally used will produce the most favorable crosstalk relationships between the various systems that may be operated over wires on one pole line. In this connection the pattern of assignments indicated below is recommended.

Assignment Scheme

FOR CROSSTALK coordination reasons it is desirable to assign systems on an open-wire line in a definite manner to take advantage of the staggering provided by the allocations.

First Crossarm	SB NB SA NA
Second Crossarm	NA SA NB SB
Third Crossarm	SB NB SA NA
Fourth Crossarm	NA SA NB SB

The assignment scheme indicated applies to all systems in which the various designations have the same significance. The assignment scheme referred to above takes advantage of the most favorable relationships between systems of different frequency allocations. In this connection there are also shown *Tables Number XI* and *XII* that indicate the advantage to be secured with respect to crosstalk mitigation by the staggering of

the frequency for the different allocations.

It should be noted that in these tables no advantage is allowed for the fact that the crosstalk will be unintelligible where unlike systems are used. In general the advantage accruing from this source will be of the order of 2 or 3 db. The designations indicate the nature of the crosstalk as to its *intelligibility* when indicated by the symbol — and its *unintelligibility* when designated by the symbol #.

For the sake of simplicity only the two highest channels from the standpoint of line frequency are shown in *Table XI* and *Table XII*. The values in *Table XII*, because of the nature of the staggering arrangements involved, reflect the effects of two possible disturbing channels. It should be noted that there will be situations where due to the lack of most favorable transposition patterns the assignment scheme indicated above will need to be varied to secure the best performance. This will be especially true on those lines transposed to a 30 kc pattern or where other unusual or special conditions prevail, in which case the high-frequency assignments will ordinarily be determined on the basis of crosstalk tests.

Application Considerations

IN PREVIOUS comments the various effects due to the line facilities have been discussed at considerable length and therefore will not be reviewed again at this point. However, the material of the line wires together with their gauge will have a considerable bearing on the transmission performance of any carrier system. Also, because of the differences in attentuation between different gauges and spacings of wires it is necessary to maintain coordinated transmission levels by utilizing essentially the same gauge of wire for all carrier systems operating on the same pole line at the same frequencies.

Insofar as applying carrier equipment to any specific line is concerned it is extremely important to take into account the transmission, noise, and crosstalk characteristics of the line in order that the equipment design characteristics, and in the final analysis the performance of the derived channels, will meet the standards established for the service to be rendered. Since the levels a system will transmit, together with the gain that can be built into economical and practical equipment arrangements, are limited it will always be necessary to compromise between the optimum signal and noise ratios and the most economical transmission requirements and repeater spacings.

In view of these limitations it is usually customary to provide repeater spacings for high-frequency carrier systems such that the absolute noise level per channel, or signal to noise ratio, will not be exceeded more than a certain small percentage of the time. Also, because of the variation in climatic conditions it will be necessary to take into consideration the number of days per year when conditions are expected to prevail that will impose the maximum attenuation conditions and, therefore, require the maximum gain characteristics of the carrier apparatus involved.

At this stage in any system engineering, it becomes necessary to consider the amount of amplification or gain available per repeater section in the carrier system that is being proposed, as well as the normal dry weather, wet weather, and maximum sleet attenuation conditions that are to be expected. With these facts in hand it can be determined what the repeater spacing should be. In this connection it is of interest to refer to the data (*see Figure* 1 *also Figure* 12) which shows the attenuation conditions that can be expected for a typical open wire line under various weather conditions.

If it can be assumed that the maximum permissible attenuation per repeater section is 60 db, then it will be evident that possible repeater spac-

TABLE XI

Staggering Advantages In DB

West to East Direction of Transmission

Disturbing System	Disturbed Systems			
	NA	SA	NB	SB
NA	0-	2#	0-	2#
SA	2#	0-	2#	0-
NB	0-	2#	0-	2#
SB	2#	0-	2#	0-

TABLE XII

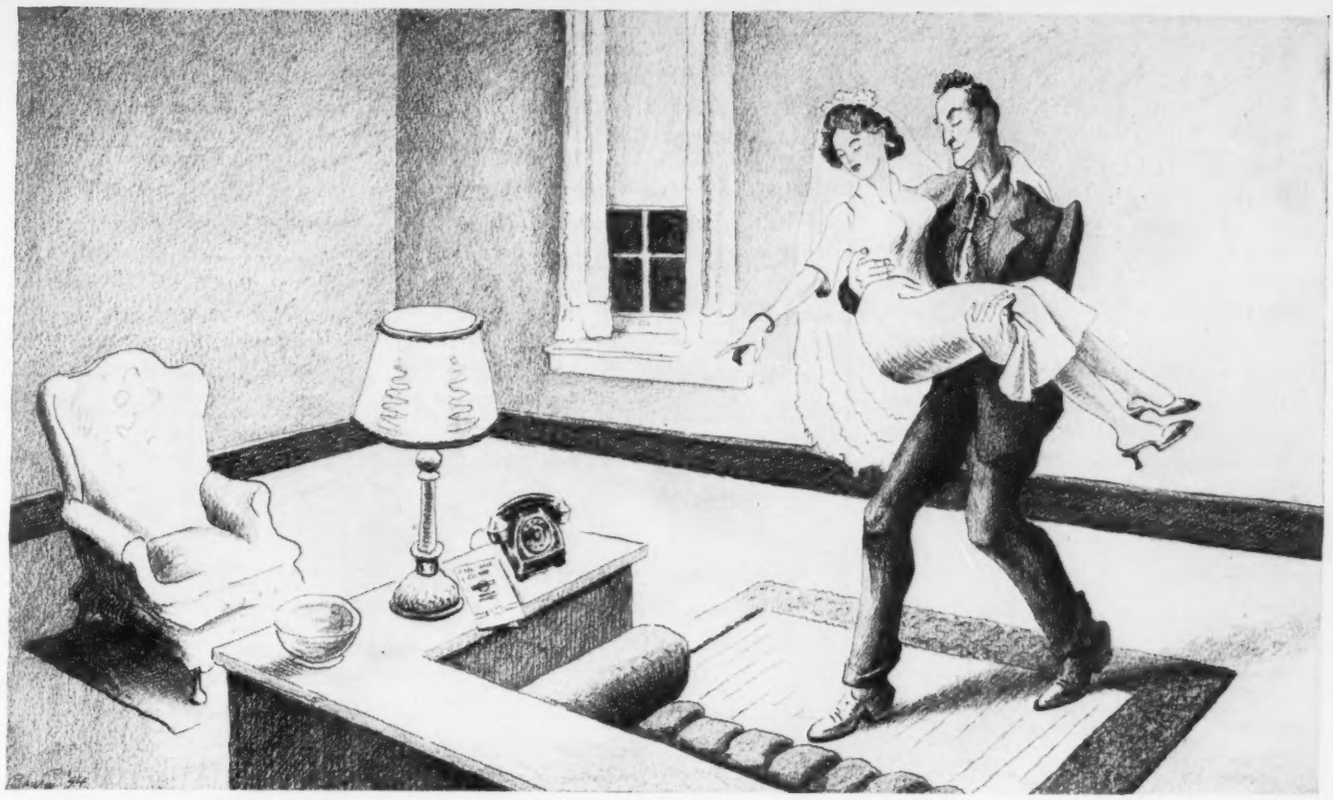
Effective Staggering Advantages In DB

East to West Direction of Transmission

Disturbing System	Disturbed Systems			
	NA	SA	NB	SB
NA	0-	5#	0#	5#
SA	5#	0-	5#	0#
NB	0#	5#	0-	5#
SB	5#	0#	5#	0-

Noise (Unintelligible Crosstalk)

- Intelligible Crosstalk



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BY Thomas Hart Benton

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ings may vary from as short as 33 miles to as long as 170 miles. In the practical case the average repeater spacing will fall some place between these limits. As an approximate basis for determining repeater spacings under the various conditions to be encountered, it is quite commonly the practice to determine these locations on the basis of approximately 30 db attenuation under wet weather conditions at 150 kc. However, before any final and definite decision with respect to repeater locations and section attenuations are reached, detailed analysis and studies will need to be made in accordance with technical data supplied by the manufacturer of the apparatus.

It must be remembered that in laying out a carrier system noise considerations will be controlling. Noise will consist of:

(1) Components from the line and the carrier terminal and repeater apparatus.
(2) Unintelligible crosstalk from other paralleling systems.
(3) Noise due to modulation products generated in the several repeaters and terminals.
(4) Noise arising from the normal modulation processes in the terminal apparatus.

The use of compandors will make it possible to derive acceptably quiet circuits in many instances, and their use should be investigated before other major measures are adopted.

The major causes of noise in a carrier system can be usually ascribed to tube noises, static noises, noise induced from power line carrier systems or radio stations, and noise introduced from the power supply (either battery or A-C operated).

The means for controlling and mitigating noise from these sources is beyond the scope of this discussion and the reader is referred to other literatures in which this subject is covered in greater detail. Experience indicates that it is uneconomical to design carrier equipment having greater reserve gain than that corresponding to the maximum expected attenuation during ice condition.

Under ice conditions the noise levels will in all probability be so high that the channels will be uncommercial even before all the gain of the equipment has been utilized. It is of interest to note that sleet is the greatest hindrance to securing economical spacing of carrier repeaters in high-frequency systems since under these conditions the attenuation may be from 5 to 10 times the normal dry weather attenuation of a line.

In those areas where sleet seldom or never occurs it obviously will be practical to utilize much longer repeater spacings, but even for these conditions an analysis should be made of the amount of noise that may be expected under the worst conditions, which frequently will be during the season of high thunderstorm incidence. For further details this particular problem will need to be studied in accordance with other literature on this subject.

The relatively high frequencies that are involved in systems of the type referred to above not only create relatively severe attenuation problems but also accentuate the effects of various crosstalk paths that would be of relatively small consequence at the lower carrier frequencies. The various paths that become significant involve not only the metallic circuit but also longitudinal circuits, and can be sufficiently severe to make the system unserviceable.

In this respect it should be noted

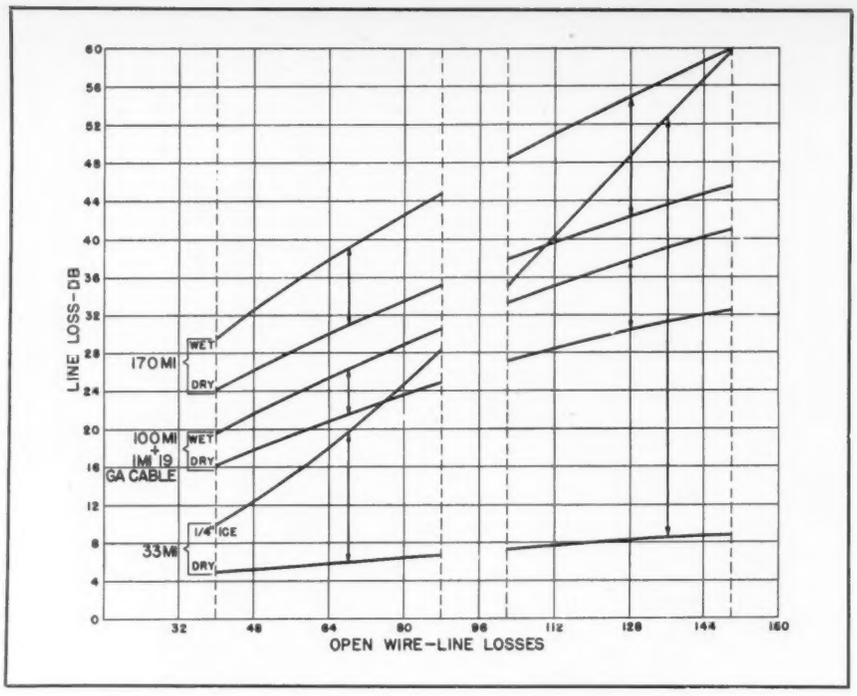

FIGURE 12: — Typical Type 45A carrier system regulating range.

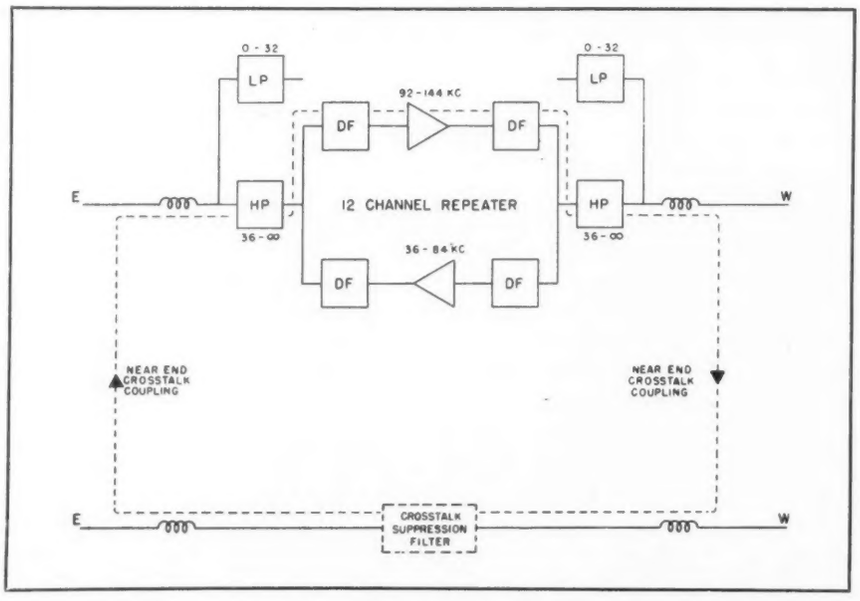

FIGURE 13: — Possible coupling path at auxiliary repeater station.

that the crosstalk coupling between two carrier systems may be through the medium of a third pair or wire that is closely paralleling or located between the two pairs carrying the interfering systems. This type of crosstalk is referred to as that due to the "tertiary circuit." It is usually not possible to reduce the various crosstalk sources and paths by transpositions alone and, therefore, special measures will generally be required to control this type of crosstalk. The most severe crosstalk of this type is usually referred to as "run-around" crosstalk and is a factor in such carrier systems as Lenkurt Type 42C, 45A and W. E. Co. "J". This can best be described by reference to *Figure* 13.

It will be noted that a substantial part of the control of crosstalk of this type is achieved by the utilization of crosstalk suppression filters. It also is generally necessary to provide special entrance cable arrangements and a gap in the open wire line facilities on both sides of the repeater station to prevent crosstalk of this type. Some of the specific measures that are usually employed in the control of run-around crosstalk can be briefly referred to as follows:

(1) Insertion of longitudinal retardation coils in all pairs on both the East and West side of the open-wire terminal poles.
(2) Insertion of crosstalk suppression filters in all pairs on the lines that are not actually utilized for the high-frequency carrier system.
(3) Introduction of a gap between the East and West open-wire terminal poles of up to 80′. Further control can also be accomplished by loading those pairs that enter into the repeater station and that are not associated with the high-frequency carrier systems.
(4) Utilization of separate lead-in cables towards the East and towards the West, and keeping them separated as much as practical.
(5) Providing suitable and adequate grounding arrangements as described in the various standard instructions on this subject.

There will be other situations where the normal equipment arrangements will not provide sufficient suppression, and for these situations the problem should be referred to the manufacturer or a supplier of the equipment for additional details in order that the layout will be adequate to provide the grade of service for which it is intended. In this connection it may be well to point out that any simplex wires that are carried through a carrier repeater office of this type without intermediate equipment on the simplex wire will be a serious source of run-around crosstalk.—*To Be Continued.*

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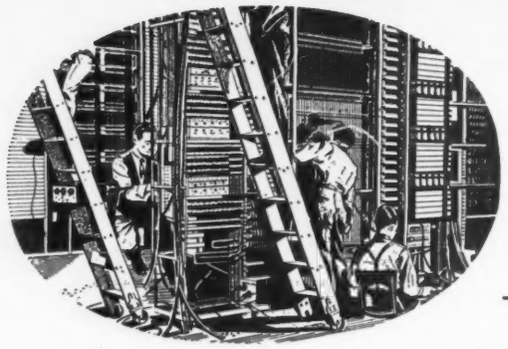

Questions and ANSWERS

Conducted by JAY G. MITCHELL

IN THIS ISSUE Mr. Mitchell discusses — (A) Transfer of Electrical Power — Matched Impedances, and (B) Request for Special Communication Service.

QUESTION: — *In answering an inquiry recently the conditions which constituted "matched impedances" were set out so that it was possible for our small local study group to understand them. However, some of us are having a little trouble in understanding just why "matched impedances" are so desirable and why the necessary rigid methods of circuit design are justified in order to attain this condition. Can you set out a simple and easily understood starting point from which we can proceed to an understanding of this subject? A simple example that can be followed through without too much complicated explanation will be very much appreciated.*

ANSWER: — In order to arrive at the basis of an understanding of this subject, as well as many others, QUESTIONS AND ANSWERS endorses the method of study in which a very simple circuit arrangement is used as an illustration. The facts which may be observed in such a simple set up may then be assumed, properly, to apply likewise in the more difficult, from the standpoint of study, actual circuit conditions.

It will be remembered that the electrical power in watts delivered to or received by an electrical device is equal number, in direct current circuits, to the amperes in the circuit multiplied by the effective volts between the terminals of the device while the current is flowing. In working out the example of the maximum transfer of electrical power, by simple experiment, a simple loop circuit can be used in which one cell of dry battery is the source of electrical power flowing into a loop circuit which comprises an adjustable rheostat. In fact it is not necessary to actually set up this arrangement unless an actual demonstration of the accuray of a few simple computations is desired.

Assume, therefore, that the Electromotive Force at the terminals of the cell of dry battery is 1.5 volts and that the internal resistance of the one cell of dry battery including all the connecting wire is 0.16 ohms. To demonstrate that the transfer of power is at the maximum when the impedance of the source of power is the same as the impedance of the portion of the circuit in which the power is used it is only necessary to visualize and, if desired to actually observe, set up three simple circuit conditions. These are shown in the following tabulation. A check of these figures may be made by an application of Ohm's Law.

E.M.F. of the Battery	Resistance of the battery and all the wire	Resistance of the load resistor in ohms	Current Strength in amperes	Voltage drop in resistor	Watts used in load resistor	
1.5	0.16	0.04	7.50	0.30	2.25	
1.5	0.16	0.16	4.69	0.75	3.52	Maximum
1.5	0.16	0.32	3.12	0.99	3.11	

It will be noted that the *power* used in the load resistor in these three circuit arrangements is at the maximum when the resistance of the load is equal in value to the resistance of the balance of the loop. In other words the greatest power is delivered to the load when its resistance is equal to that of the source and the connecting circuit. Now it may be said that this illustration is very true for a *direct current* supply but does not adequately represent conditions when *alternating current* is involved. This is a very natural comment but it is seen not to be justified when it is remembered that impedance is the opposition offered to the flow of an alternating current and is the exact equivalent of direct current resistance in the apportionment of power between the two portions of the same circuit carrying the same kind of current.

It may be helpful to improve an understanding of this very important principle if a few more assumptions are made as to the resistance of the load as set out in the table above. The principle is very important and the direct current illustration may be accepted as a simple statement of a universal electrical law.

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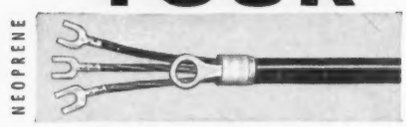
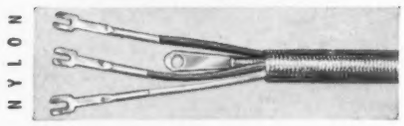
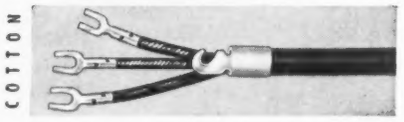


BEST



BUY!



Are you familiar with the features of these fine cords?

NEOPRENE covered cords are a highly serviceable cord, extensively used in a wide variety of services. They are moisture and grease proof . . . easy to keep clean.

NYLON covered cords are a relatively new development in telephone cords. Their fine smooth texture makes them the preferred cords for switchboard use. They give long service. Preferred by operators because of their fast, easy handling.

COTTON cords are in standard use everywhere. Their fine woven wrap makes them very serviceable for all around purposes.

Take your choice—Neoprene, Nylon or Cotton. They're all high quality cords made in accordance with Runzel high standard of quality. We carry a large stock of cords for every purpose.

Our geographical location means QUICK SERVICE.

RUNZEL
Cord and Wire Co.
4723 W. MONTROSE AVE.
CHICAGO 41, ILL.

have, therefore, no established rate for supplying it in our territory. Can you outline the preliminary steps that must be taken?

ANSWER: — This inquiry is one which involves both commercial and plant activities. In the first place it is suggested that this company canvass the matter with its principal Long Distance outlet telephone utility. Such a conference would bring out the plant requirements for the establishment of the desired service and would probably include a decision as to the most advantageous routing for the necessary circuit, the annual charge that would be asked by the toll outlet telephone company for the service (which would be charged to the local company supplying the service), the essential electrical characteristics of the connecting circuit from the local plant to the toll center and the type and arrangement of the local facilities that will be required.

After all these points and the related facts involving plant have been settled it will be necessary to develop the rate to be charged for the proposed service. In this part of the conference it may well be disclosed that the telephone company at the toll outlet may insist upon making the contract direct with the subscriber to cover the service with a side contract with the local telephone company to rent the necessary line circuit and local plant to the toll outlet company for that purpose.

It is certain that the entire problem is primarily a COMMERCIAL one which will require the closest cooperation of the Plant department.

In addition to the factors outlined in general terms it might be well to negotiate an arrangement which would be flexible and would permit the local telephone company that sent in this inquiry to arrange for the development of the same service to additional applicants in the not too distant future. Subject to Charter limitations and the rules of your State Commission this may open the door to a development of a very profitable side line for the future and, for that reason, it is suggested that *all factors* be very carefully and thoroughly studied before any rate is quoted for this special service. The required plant arrangements will almost certainly require intensive study and careful preparation while the rate must be fixed at a figure which will produce sufficient revenue to cover *all costs* and a reasonable return. The tentative overall arrangement should be most carefully analyzed, with this in view, before any contract is signed.—THE END.

General of Southwest Reports Two Increases

GENERAL TELEPHONE CO. of the Southwest was granted two rate increases during the month of November. They are as follows:

Exchange	Effective		Old Rate	New Rate
Crosbyton, Texas	Dec. 1, 1954			
Dail	Bus.—1-Party		$7.50	$9.50
577 Stations		2-Party	6.00	8.00
	Res.—1-Party		4.25	5.00
		2-Party	3.50	4.25
		4-Party	3.00	3.50
Seymour, Texas	Nov. 16, 1954			
Dial	Bus.—1-Party		9.00	10.50
1332 Stations		2-Party	7.50	8.75
	Res.—1-Party		4.50	5.25
		2-Party	3.75	4.40
		4-Party	3.25	3.75

New West Coast Plant for Preformed Line Products

PREFORMED LINE PRODUCTS CO., a Cleveland manufacturer of power-line equipment, has leased 5½ acres in the Stanford light industrial tract (Stanford University) and will begin work immediately on a $350,000 plant to serve as its western headquarters. According to Thomas F. Peterson, president of the company, the concrete building of 23,000 square feet has been designed and will be erected by The Austin Co., Oakland, Calif. Completion within six months is anticipated.

Preformed Line Products Co. was established by Mr. Peterson shortly after World War II to manufacture electrical transmission and distribution line equipment such as armor rods, dead-ends, splices, guy-grips and line guards. About a fourth of its present sales volume, now being shipped from Cleveland, will be handled in the new Stanford plant, he said.

Mr. Peterson, who earned a Stanford electrical engineering degree in 1924, has established a $10,000 research project at the Ryan High-Voltage Laboratory at Stanford under the direction of Professor Joseph S. Carroll. The project will be coordinated with production activity at the plant. He has also contributed $2,000 to the University for two 1954-55 scholarships in electrical engineering.

EXTRAS PAY OFF

(Concluded From Page 35)

Honesty: — Every employer has a right to expect the maximum of honesty from the people who work for him. Honest treatment of their work, of the job they have to do, of themselves . . . it's an important "extra" to look for in every person we add to the payroll.

Ambition: — Too many employes have the idea that no employer cares particularly whether or not they as individuals get ahead in the firm so long as they do their work right. We need ambitious people to build our business as they build their own careers. Looking for this important extra asset is worth any extra effort it will take.

Compliance With Rules: — We know that the rules we have set up are there for a very good purpose. When one employe refuses to obey them or does so reluctantly the whole purpose has been defeated.

Many individuals are by nature resentful of any rules or regulations that go with their jobs. This can be detected by observing their reactions to a discussion of such rules. Where there is the slightest suspicion of such an attitude we can well forget such a prospect.

The employe should also be made to understand that taking unauthorized "sick leave" to "go hunting" is an act of disloyalty to the team surrounding him. One who thinks otherwise should never be hired in the first place.

There are many other such factors governing the relationship between employer and employe but the foregoing "extras" are the important ones that we should look for in every individual before he or she is hired. We should follow up by insisting that these "extras" be adhered to for they are rights we have as employers.

Continuous education should sell such ideas to the staff. Every medium from notes with pay checks to bulletin boards, staff meetings, etc., should be employed toward this end.

—Ernest W. Fair.

Here's how you can enjoy extra profit dollars with

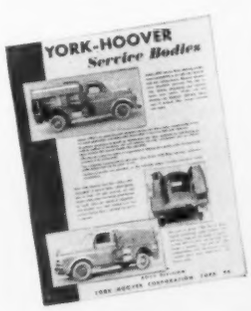
YORK-HOOVER
Model 4986
SERVICE BODIES

THE MODEL 4986 SERVICE BODY is an especially well-designed service and repair body, engineered to be installed on a standard ¾ to 1 ton chassis.

THE PRIMARY PURPOSE of the Model 4986 Service Body is to speed up maintenance and repair work by contributing an orderly method of carrying necessary tools and materials.

STURDY, ALL-METAL CONSTRUCTION provides rugged durability—a factor that enables the Model 4986 Body to "take it" for everyday service work.

COST-SAVING EFFICIENCY is the end result . . . the reason why for over 60 years York-Hoover Equipment has maintained a high record of performance, low operating and maintenance costs.



Get the facts! Write for a FREE copy of Bulletin No. 934 today.

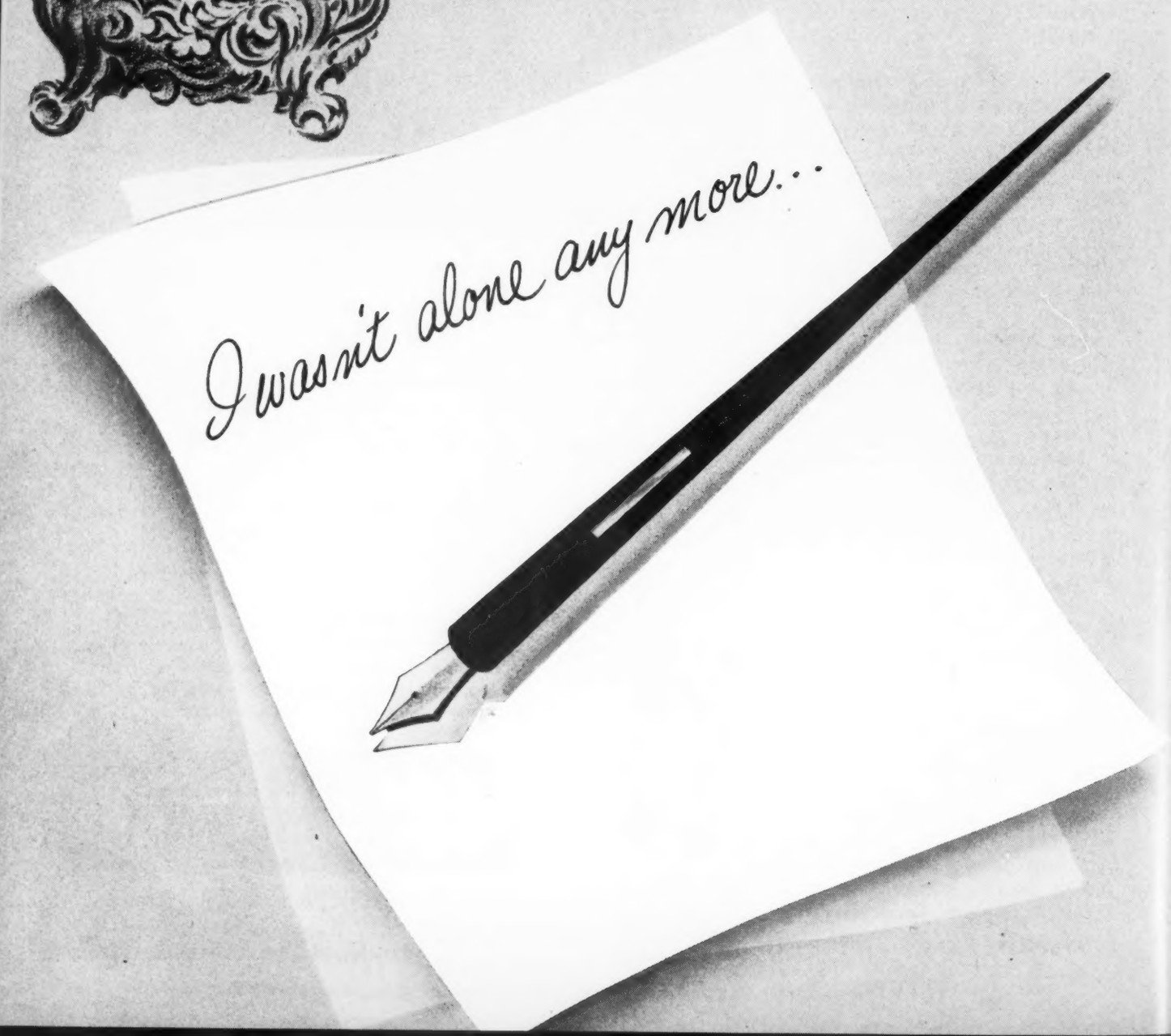
YORK-HOOVER
PUBLIC UTILITY BODIES

YORK-HOOVER CORPORATION
BODY DIVISION
YORK, PENNSYLVANIA

Words of Appreciation

America's telephone companies work hard for a prime asset—the satisfied user. So all telephone people are gratified when a user writes her appreciation of telephone service.

Across the page is an ad which tells what the telephone means to one woman. Appearing in January magazines, it will move many a user to say: "Why, I feel that way about the telephone, too!"



Mrs. Donald Cummings, Jr., and her young son Donald

"I WASN'T ALONE ANY MORE"

Most of us know what it is like to have a telephone. But have you ever thought what it would be like if it wasn't there, even for a little while?

Here are some good words along that line from Mrs. Donald Cummings, Jr.

"When we moved into our new house," she told us a few weeks ago, "I felt a little strange—with a young baby and all—and I couldn't seem to get a feeling of being settled and at home.

"Then the telephone was put in. And suddenly everything seemed different. I could call people! I felt better about being by myself in the house with the baby. I felt better about my mother who had been ill in Boston. And about my husband in uniform far away.

"And then I realized that it wasn't just the telephone calls I could make—it was that people could call me if necessary. I wasn't alone any more."

BELL TELEPHONE SYSTEM

Reminding you that someone, somewhere, would like to hear your voice today.

J. N. Johnson Heads Florida Association

ST. PETERSBURG, FLA. — 365 telephone industry members attended the 47th Annual meeting of the Florida Telephone Association on November 15-16, 1954 at the Soreno Hotel, St. Petersburg, Fla.

The annual meeting of the board was attended by 18 directors. Among items discussed were: (1) the proposed Rules and Regulations governing telephone companies, Docket No. 3747-TP, Order No. 2103 dated November 4, 1954, issued by the Florida Railroad & Public Utilities Commission; and (2) the study being made of the cost of relocating telephone facilities in connection with highway construction. This discussion resulted in a resolution proposing that the association urge the Congress of the United States to enact legislation providing that utilities be reimbursed for the net cost of the relocating of their facilities to accommodate Federal Aid projects.

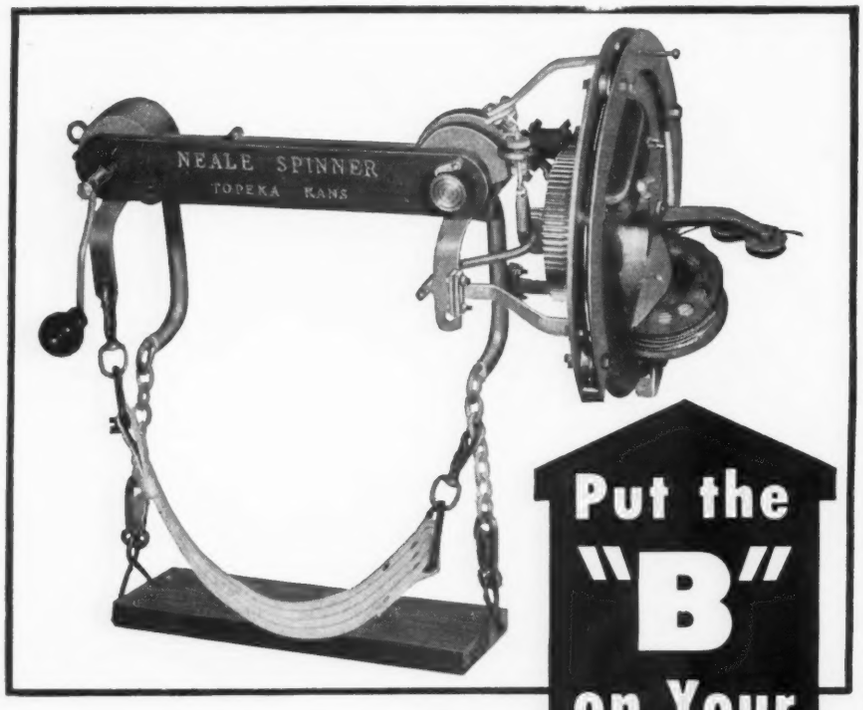
At this meeting the following officers were elected to serve for 1955: President, J. N. Johnson, Ft. Myers; 1st Vice President, Carl D. Brorein, Jr., Tampa; 2nd Vice President, Mitchell N. Drew, Quincy; and, Secretary-Treasurer, Josephine Poppleton, Tampa.

Directors elected were: M. L. Barre, Southern Bell Tel. & Tel. Co., Jacksonville; H. A. Bishop, Starke Telephone Co., Starke; P. E. Brannen, Inter County Tel. & Tel. Co., Ft. Myers; Carl D. Brorein, Carl D. Brorein, Jr., and W. A. Brown, all of Peninsular Telephone Co., Tampa; Mrs. Allene M. Drew Cantey, Quincy Telephone Co., Quincy; E. L. Cox, Gulf Telephone Co., Perry; B. A. Galloway, and J. K. Galloway, Winter Park Telephone Co., Winter Park; J. N. Johnson, Inter County Tel. & Tel. Co., Ft. Myers; Ralph Maner (Representing Mfgrs.), L. M. Berry & Co., Tampa; J. L. McGehee, West Florida Tel. & Tel. Co., Marianna; E. M. Menendez, Southeastern Telephone Co., Tallahassee; Josephine Poppleton, Peninsular Telephone Co., Tampa; J. L. Sharit, St. Joseph Tel. & Tel. Co., Port St. Joe; R. W. Shriner, Peninsular Telephone Co., Tampa; Blair C. Stone, Southeastern Telephone Co., Tallahassee; Max Wettstein, Florida Telephone Corp., Ocala; Otto Wettstein, III, North Florida Telephone Co., Live Oak; and Hugh C. MacFarlane, attorney.

Speakers at the general convention hassee; J. N. Dorsey, Florida manhassee; J. N. Dorsey, Florida Manager, Southern Bell Tel. & Tel. Co., Jacksonville; Floyd T. Christian, superintendent of public instruction, Pinellas County, Fla.; Mrs. Mayme Workman, executive secretary, Independent Telephone Pioneer Association, Springfield, Ill.; and Radio Commentator Roger Bennett.

Traffic Conference speakers presented by Burton Brown, general traffic manager of the Florida Telephone Corp. were: Ralph A. Roane, traffic manager of Southern Bell's Jacksonville District; and George W. Rose, traffic manager, Peninsular Telephone Co., Tampa.

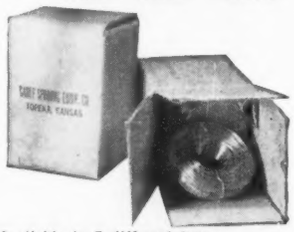
D. A. Kafka, general commercial superintendent, Peninsular Telephone Co., Tampa, directed the joint Commercial and Traffic Department Conference. Speakers were: W. A. Ketcham, division information supervisor, Southern Bell Tel. & Tel. Co., Jacksonville; and Ernest L. Cox, Jr., Gulf Telephone Co., Perry.



Put the "B" on Your Problems

The Neale Model B is designed for one-man operation. It may be used with equal effectiveness for spinning new cable or maintenance spinning of existing cable. This machine is easy to transfer at pole . . . simply by removing the gate in the spinner head. Many telephone companies . . . large and small . . . have reported success in using this cable spinner to reduce outside plant costs and solve problems of new construction and maintenance.

For Best Results Use Neal Wire



Available in 7 different types . . . all made to meet the toughest construction and corrosion problems.

See Your Jobber

CABLE SPINNING Equipment Company PHONE 2-7234

3100 TOPEKA AVE. TOPEKA, KANSAS

The Kenmore Method of Manufacturing Electro-Plated, Copper Coated Steel Wire

By HERBERT KENMORE*

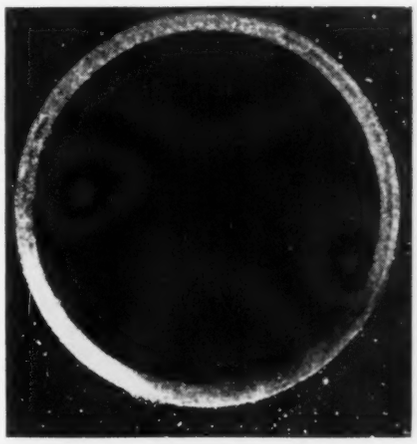
SINCE development of electricity as a source of power, the conduction of this power created the necessity for an efficient medium, which was found to be copper. Electricity also was the basis to transport signals through similar conductors.

The cheapest way of installing the conductor wires, was found to be through overhead conductor lines. To prevent these lines from sagging and use as few supporting poles as possible, it was necessary to reinforce these copper conductors. Therefore, the need to combine strength with conductivity. Originally brasses and bronzes were used to satisfy this requirement. However, during the First World War, an efficient method was found by combining steel and copper — steel for strength and an outer sheet of copper for conductivity.

This process, which consists of pouring molten copper around a steel billet, expanded more and more and was developed by a leading firm. The intricate requirements and specialized method of manufacturing based on a high degree of know how created a situation whereby only this one firm was able to supply the demand.

The telephone and Signal industry still rely on either bronze or copperclad steel as their basis for conduction. The Bell System was first to use an electroplating method to create a conductor wire and installed its own production line to make one of its items, namely the telephone drop wire .040", by electrolytic deposit of copper onto a finished drawn steel wire (see paper presented and published in "*Wire and Wire Products*," issue of *February*, 1952).

After nine years of research the Kenmore Metals Corp., specialists in the electroplating of wire, has completed a method which allows the telephone industry to have a second source of supply of copperclad steel wire of all types and requirements.



The copper coating, produced by electroforming is concentric around the steel core.

Method Of Operation

TO SECURE the right steel core material, Kenmore Metals has worked with the Metallurgical Departments of two steel mills to develop a specially treated analysis of steel wire rods. These rods are supplied according to Kenmore specifications in any size ranging from .200" to ½" in coils of from 400 to 600 lbs. each.

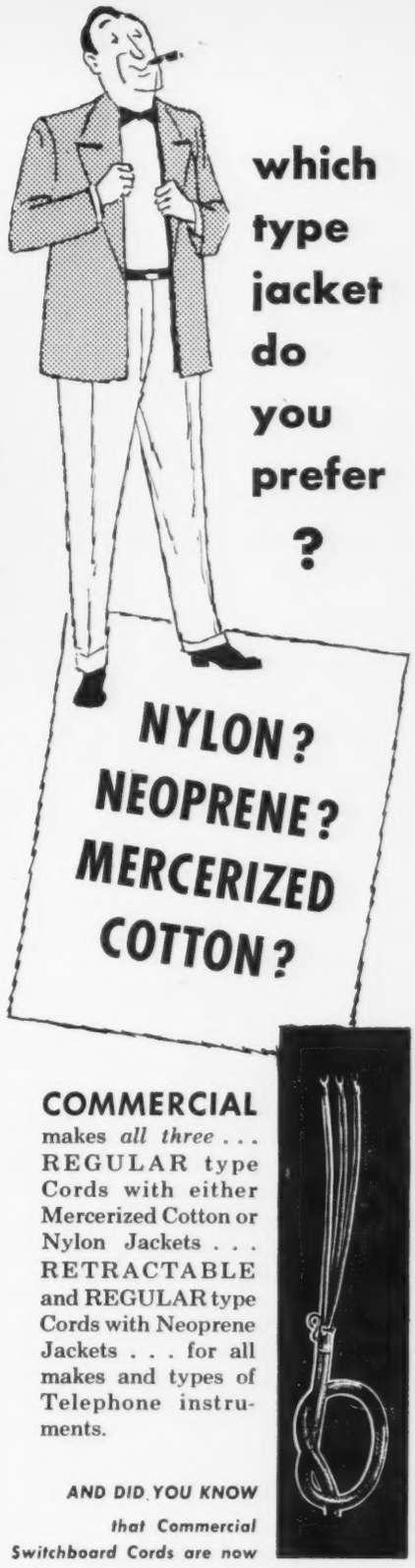
Kenmore introduces the wire rods into a continuous operation electroplating unit by welding the ends of the coils together. The electroplating unit is constructed to allow nine different cleaning operations of the coil and pre-treatment preparatory to electro-forming a heavy layer of copper onto the steel rod..

The wire moves in helical form supported on a shaft through the plating equipment and the electroforming takes place by interrupting the plating operation continuously by having the wire coil leave and reenter the plating bath up to 100 times during the plating operation.

The patented design allows a total length of approximately 900 feet of wire to be constantly plated in a unit which is only 50 feet long. An important factor in the operation is the fact that the thickness of the copper deposit is constantly controlled and recorded automatically on specially designed recording instruments. On

Please Turn To Page 65

**Mr. Kenmore is president of Kenmore Metals Corp., Jersey City, N. J.*



COMMERCIAL makes *all three* . . . REGULAR type Cords with either Mercerized Cotton or Nylon Jackets . . . RETRACTABLE and REGULAR type Cords with Neoprene Jackets . . . for all makes and types of Telephone instruments.

AND DID YOU KNOW that Commercial Switchboard Cords are now available with or without plugs?

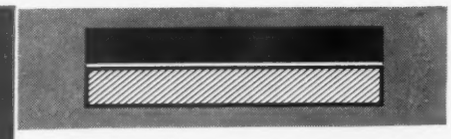
Write for Catalog and Samples

COMMERCIAL CORD & SUPPLY CO. INC.

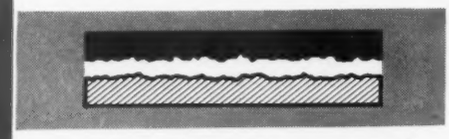
26 E. Main St. • Clifton Springs, N. Y.

Phone: CLIFTON SPRINGS 189

Banish Burnaway...



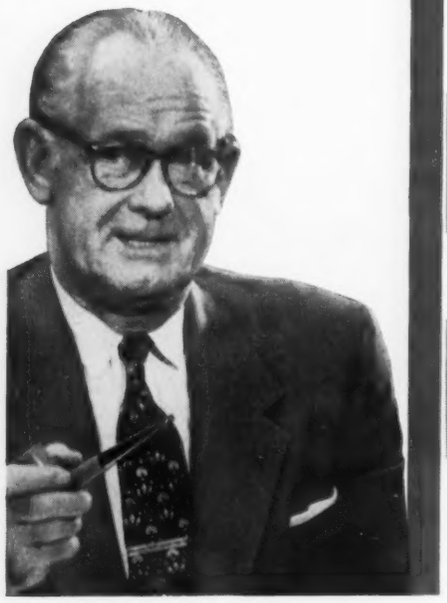
When ordinary, *non-grounding* discharge blocks are used, each discharge tends to burn away a little more of the electrodes . . .

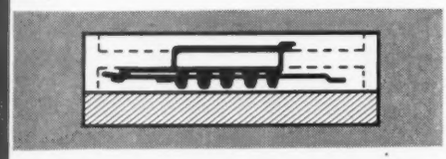


. . . thus widening the gap. Such blocks become completely ineffective in time, since they protect only at constantly increasing potentials.

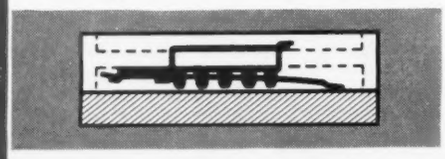
. . . Get *Lasting* Protection

with Automatic's "Dollar-Saver" Discharge Blocks!

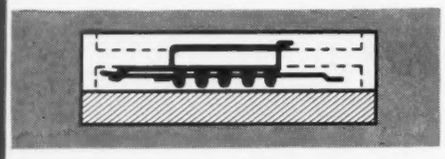




When Automatic's Type 70 "Dollar-Saver" Discharge Blocks are used, a current jumping the gap heats the bi-metallic strip . . .



. . . which bends, shorting the line to ground instantly. Type 70 . . .



. . . then resets itself. Sawteeth and carbon are still sound, not partially burned away. Type 70 provides *lasting*, dependable protection.

Type 70's are proved money-savers in actual telephone service all over the country.

Order Cat. No. SC-10 (.003" gap) for substation protectors and distributing frames. (Operates within UL requirements.)

Order Cat. No. SC-11 (.0055" gap) for cable terminals and crossarm arresters.

Products of the Telephone Specialty Department of

AUTOMATIC ELECTRIC

Distributors in U. S. and Possessions: Automatic Electric Sales Corporation
Export Distributors: International Automatic Electric Corporation
1033 West Van Buren Street, Chicago 7, U. S. A.

Helpful Booklets

MANUAL OF RECORDS MANAGEMENT: — Dolin Metal Products, Inc., manufacturers of an extensive line of steel transfer files, is making available to executives, office managers and those directly concerned with the problems of records control, a new Manual of Records Management written by Herman Limberg, management consultant. This factual "how to" should prove extremely helpful to those faced with the problems of instituting and maintaining a program of efficient record keeping. Requests for copies of this manual should be made on company letterhead and addressed directly to the manufacturer at 321-29 (TEM) Lexington Ave., Brooklyn 16, N. Y.

• • •

GAS ANALYZERS: — Mine Safety Appliances Company's complete line of Combustible Gas Analyzers and Alarms are described in a 20-page brochure recently published by the Pittsburgh, Pa., safety equipment manufacturer.

Prepared to give details of how these instruments work, the brochure contains part-by-part descriptions of the components of MSA's analyzers. Actual installations in varied industries are fully covered, and a method of designing a combustible gas alarm system is shown schematically. Instruments to protect against most of the known combustible gasses and vapor are described.

Copies of the brochure, *Number* 0703-3, can be obtained from *Mine Safety Appliances Co., 201 N. Braddock Ave., Pittsburgh 8, Pa.*

• • •

A NEW FOUR-PAGE folder (Form 954) illustrates the complete series of Hall-designed hydraulic derricks manufactured by *American Truck Equipment Co., Swan Island, Portland, Ore.* Operation position charts and load ratings for all ATECO models are among data set forth by the firm, said to be the pioneer designer of mobile pole-handling equipment of this type.

(Continued From Page 63)

one instrument the speed of travel of the wire is recorded. On the second instrument the amount of current introduced into the wire is recorded.

These two factors can be translated into the amount of copper in grams per kilo of finished wire electro-deposited on the wire. Three sets of instruments are used because the current is introduced on three different points for uniformity of coating. Each coil of wire, when introduced into the plating machine, is numbered and the time of its introduction noted. On the recording tape the time is also registered. The recording instruments eliminate the chance for human error as the instruments record the thickness of the copper coating inch by inch.

Product

AFTER THE plating has taken place, the plated wire rod is heat-treated to increase the conductivity of the electro-deposit, which differs from the molten process insofar as the electro-formed copper is chemically pure, and could be designated as oxygen-free copper.

Each coil is cut at the point of the original weld in order not to destroy the very selective steel analysis of the original wire rod. Two 12″ pieces are cut from each end of the 400/600 lb. coil and wrapped 8 times around its own diameter and the copper must be smooth and free from imperfection, flaking or other defects. The other pieces will be twisted forming a loop on a mandrel of 2½ times the diameter of the wire to be tested and making not less than 20 twists in a length of 100 times the normal diameter of the wire. The twist will be continued to destruction and the test samples should not reveal any imperfections, seams, pits or slivers in the wires.

After passing this first inspection, the wire is drawn on a continuous highspeed wire drawing machine to the desired size. If a wire size is required beyond 85% reduction of the cross-sectional area, the wire is heat treated and the wire drawing operation continued. The wire is continuously tested during the drawing operation using standard wire mill practice as to diameter, out-of-roundness and smoothness of surface.

The finished size of the wire is

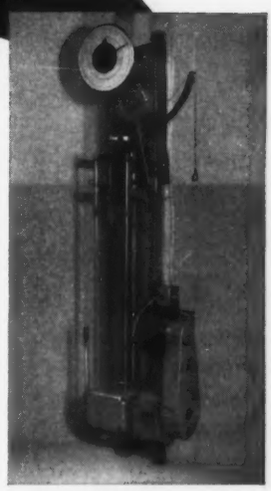
ADHESION TESTS SHOW THE CONDUCTOR BREAKS BEFORE LOWELL INSULATION SLIPS

No. 2 in a series of test results on LOWELL TELEPHONE DROP WIRE. "P Clamp" adhesion test.

The greatest strain on drop wire takes place at the "P Clamp" where the wire is attached to pole or house. The weight of ice and the whipping action of the wind develop extra strain at this point so that the best possible bond is essential, between the insulation and the conductor wire, to insure dependable service and long life.

To develop the strongest possible adhesion, all Lowell wires are brass flashed and special formulas have been evolved for insulation compounds. Lowell jacket compounds also have excellent resistance to abrasion and the ability to withstand the action of the elements under varying atmospheric conditions.

As a constant check, tensile tests are made at the Lowell Laboratories where the conductors are stretched to their breaking point before any slippage of the insulation or jackets takes place. These rigid laboratory tests are your assurance that Lowell Drop Wires will stand up under the most severe conditions and give dependable service without breakdown at this most critical point where the grip of the "P Clamp" must support the entire weight of the span. Year marker threads and manufacturer's identification permit user to keep accurate records of performance and long life in service.



Lowell Drop Wires are continually tested for adhesion of the insulation to the conductor. The conductor must break before the adhesion bond between the insulation and conductor is severed.

Write for Lowell Insulated Wire Catalog

"fine wires only"

LOWELL INSULATED WIRE DIVISION OF The Overlakes Corporation
171 LINCOLN STREET ··· LOWELL, MASSACHUSETTS

(Concluded From Page 65)

then tested for the copper thickness under a microscope or a magnetic resistance instrument indicating the thickness of copper by its D.C. resistance. The copper coating, which is so produced by electro-forming is concentric around the steel core. This is because the wire is not hot-rolled as a steel/copper combination to reduce its size. Instead, a uniform layer of copper coating is deposited on the wire by electro-deposition. This uniformity remains during the subsequent wire drawing operations.

New Properties

THE WIDE choice of steel analysis allows production (for example) of a 6 AWG-gauge wire with a 30% conductivity having a breaking load of 3600 lbs. On a telephone drop wire of 18 gauge, the breaking load can be made to be 235 lbs. In spite of the increased breaking strength, the elongation and flexibility is the same as the wire having a lower breaking load. This allows the installation and use of a finer wire size. For instance, instead of using a .080″ wire, an .072″ diameter wire may be used.

Our electroplating method allows very close control of the amount of copper to be deposited. We had cases where we had specification to deposit not less than 3½ grams per kg. and not more than 4 grams per kg. on a finished product and this in hundreds of tons. Translated in higher percentage thickness we could guarantee to deposit as an example not less than 25 and not more than 26% of copper by volume of weight in the finished product. It is without question that this is only the beginning of a new product because the requirements of the industry will teach us how to make more and better use of our "know how."—THE END.

Washington Bureau Reports

(Continued From Page 32)

by the Bell companies does not, in any way, jeopardize the allocation of frequencies for private system users. On the contrary, the availability of leased radio facilities and maintenance encourages eligible users to employ their allocated frequencies. Many users might otherwise be deterred by problems of capital outlay, obsolescence, and complex maintenance. Clearly, if these problems are minimized by leasing from common carriers, the wider use of frequencies by eligible licensees is thereby made possible. Such wider use, in fact, strengthens the present allocation of frequencies to private licensees, rather than weakening it has been claimed by some.

"Where Bell companies provide equipment and maintenance for private mobile systems to eligible licensees, the licensee has full control and responsibility for his system. This is just as true whether he leases the system from the telephone company or owns it himself and is further assured by contracted arrangements between the licensee and the supplier.

"The Bell companies' willingness to provide private systems gives eligible users a choice between ownership or leasing—an oportunity to make the right business decision in any situation."

Network TV Service

PROSPECTS of a Bell System service offering through which network television service could be provided to relatively remote communities via the off-the-air pickup method, if the results are acceptable to the broadcasters and the public, were mentioned to the FCC in filings on the Commission's proposed rule change to permit private intercity TV relay systems under some circumstances whether or not common carrier facilities are available.

In its filing, the American Telephone & Telegraph Co. Long Lines Department said that "If the off-the-air method provides service which is acceptable to the broadcaster and the public, the connecting link between the pickup point and the broadcasting station could be provided by common carriers at charges substantially less than for direct network connection."

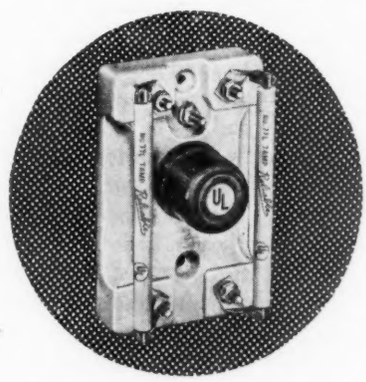
AT&T, in an announcement of the

(Please Turn To Page 68)

Construction and
WITH THE DOUBLE
STROMBERG-CARLSON
LEADING

individual station protector

reliable 955A



MFD. BY RELIABLE ELECTRIC COMPANY

- One-piece Design
- Simplified Mounting
- Asbestos Mats Eliminated

The very simplicity of the Reliable 955A is assurance of long, trouble-free service. Fuses are mounted on a one-piece, low absorption porcelain, well spaced for convenient connecting. Reliable Self-cleaning Sawtooth Discharge Blocks are standard, dissipating static without time lag or danger of grounding the line. The 955A uses No. 77L, seven ampere ceramic fuses.

"Reliable Identifies the Quality"

...materials
...Supplies
...GUARANTEE OF
...AND AMERICA'S
...MANUFACTURERS

crapo

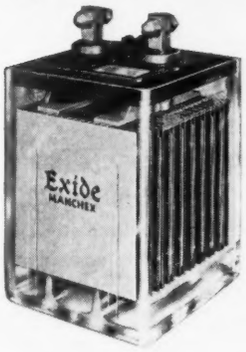
guy and messenger galvanized strand

The superior tensile properties inherent in steel are used to full advantage in *Crapo* Galvanized Strand. The tightly adherent zinc coating applied by the *Crapo* Galvanizing Process provides lasting protection against corrosion, and prolongs the life of the strand. Controlled ductility makes *Crapo* Strand easy to work and to serve. Low first cost and low yearly cost result in important economies for operating companies.

The all-round dependability of *Crapo* Galvanized Steel Strand is being demonstrated constantly by its outstanding performance in service. There is a size and grade for all practical needs.

LONG LIFE—LOW COST

Exide-Manchex
telephone batteries



assure positive operation

For Central Office and Private Branch Exchange Equipment

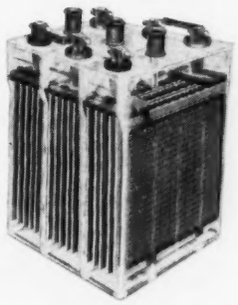
This is proven daily in exchanges of every size . . . for over 60 years Exide Batteries have been serving the Telephone Industry . . . the Manchester positive plate with its exclusive button type construction provides exceptionally long life . . . latest developments on molded glass jars permit compact space saving installation . . . heavy terminal posts with copper inserts provide extra conductivity for sustained voltage at high discharge rates . . . microporous rubber along with slotted plastic separators, are impervious to chemical and electrical reactions . . . plastic spacers assure plate alignment . . . for assured dependability, long life and low-cost maintenance use Exide Manchex.

The Electric Storage Battery Co.
Philadelphia, Pa.

Dependable Batteries for 66 Years

40% longer life... steady, dependable power...

PlastiCal Lead Calcium Batteries



Here's a new kind of battery that gives you at least 40% longer life than conventional lead-antimonial batteries in floating service.

PlastiCal Batteries combine a durable clear plastic case with revolutionary lead-calcium grids. The alloying of pure lead with calcium gives these grids a high tensile strength, for long useful life, at the same time they eliminate the undesirable side reactions of lead-antimony grids, which shorten battery life by depositing antimony on the negative plates.

Because the negative plates stay free and healthy, PlastiCal Batteries keep their chargeability, requiring only $\frac{1}{10}$ as much current for complete recharging as a new lead-antimony battery. Maintenance costs are low, because inspection is quick and visual. Rugged plastic resists breakage.

Made by C&D Batteries, Inc.

Distributed by
STROMBERG-CARLSON

ROCHESTER • CHICAGO • ATLANTA • KANSAS CITY • SAN FRANCISCO • TORONTO

High Fidelity Radios and Radio-Phonographs

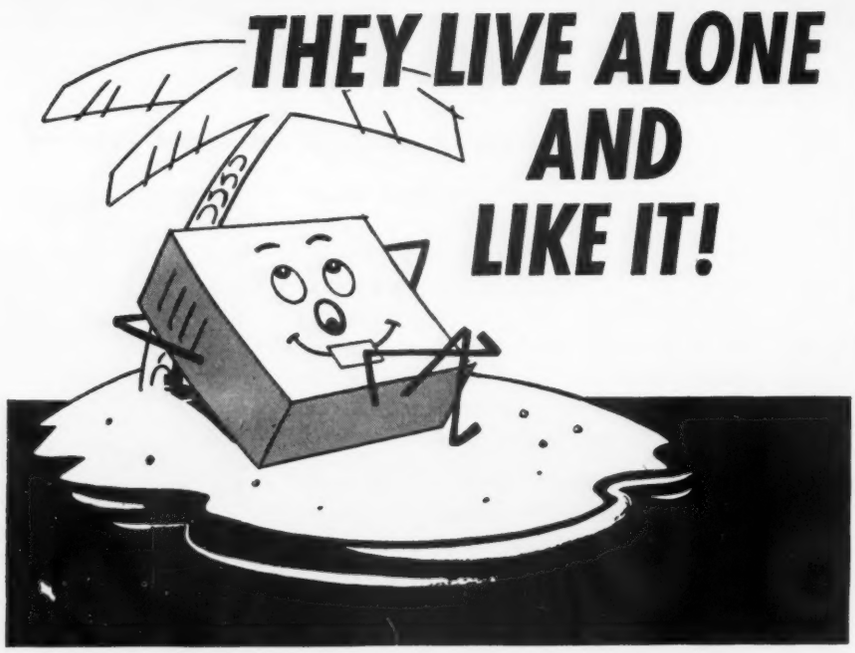
Office Intercom Equipment

Electronic Carillons for Churches and Public Buildings

Sound and Public Address Systems

"Panoramic Vision" Television Receivers

AND MANY OTHER ELECTRONIC PRODUCTS FOR OUR ARMED FORCES



RAYTHEON **RECTIFILTERS*** (BATTERY ELIMINATORS)

Raytheon RectiFilteRs are happier left alone. Except for a visit every twelve months or so for routine maintenance, they are content to go on providing D. C. output voltage year after year without attention.

That's an outstanding virtue in the Telephone Industry where trouble-free dependability is so vitally important.

Raytheon RectiFilteRs eliminate the need for storage batteries . . . automatically provide closely filtered and stabilized D. C. output voltage at low cost . . . release charging cable pairs for revenue producing service.

You'll like Raytheon RectiFilteRs because you never have to give them a thought — because they give you faithful service year after year at lowest cost.

RAYTHEON
MANUFACTURING COMPANY
EQUIPMENT SALES DIVISION
DEPT. 6120-TE, WALTHAM 54, MASSACHUSETTS

DISTRICT OFFICES: BOSTON, NEW YORK, CLEVELAND, CHICAGO, NEW ORLEANS, LOS ANGELES (WILMINGTON), SAN FRANCISCO, SEATTLE
INTERNATIONAL DIVISION: 19 RECTOR ST., NEW YORK CITY

RAYTHEON PRODUCTS INCLUDE: RectiChargeR* battery chargers; RectiFilteR* battery eliminators; Voltage stabilizers (regulators); Transformers; Tubes and other electronic equipment.

*Reg. U. S. Pat. Off.

Specify Raytheon RectiChargeRs and RectiFilteRs for completely dependable Telephone service. Your supplier offers a complete line for all requirements. Ask him for details or write direct.

filing, reported that it "is examining the possibility of a new type of service to meet the developing requirement for the off-the-air pickup method of serving smaller communities."

The filing said that there "are disadvantages" to the off-the-air pickup method, including a "generally inferior" picture, and that "any comparison of such methods with common carrier network transmission must take into account the differences in the character and quality of the service obtained."

In opposing the proposed rule and supporting the present FCC policy that common carriers provide the service wherever they have facilities available, Long Lines pointed to the rapid development of the Bell TV network system, now totaling 66,000 channel miles.

A number of broadcasters backed the proposed rule change, stating that smaller TV stations off the main network routes cannot afford present common carrier rates for intercity service.

Mrs. Aletta K. Hirsch Dies

MRS. ALETTA K. HIRSCH, 78, wife of Gustav Hirsch, passed away December 19, 1954 at her residence, 2459 Tremont Road, Columbus, Ohio, after an illness of two weeks.

Her husband, Gustav, is president and principal owner of the Gustav Hirsch Organization, Inc., nationally known firm of consulting engineers and electrical contractors.

Mrs. Hirsch was born in Columbus, Ohio on October 19, 1876, she was the daughter of Julius A. and Emma Kremer.

Surviving besides her husband is a daughter, Irene Hirsch, at home, also three nephews and a niece. Services were held at the residence on December 22, 1954.

Stromberg-Carlson Makes Personnel Changes

R. C. TAIT, president of the Stromberg-Carlson Co., Rochester, N. Y., announced Dec. 22 that the board of directors at its regular meeting voted three changes in officer titles and added two new officers, as follows:

John H. Voss, formerly general manager, telephone division, becomes vice president, telephone division.

Clifford J. Hunt, formerly general manager, radio-television division,

THE *SWING* IS DEFINITELY TO WB® TELECORD®...

Whitney Blake TELECORD is being specified by more and more independent telephone companies for their telephone cord requirements.

TELECORD with its sturdy neoprene jacket is the logical replacement for outdated textile covered cords.

TELECORD's tough neoprene jacket lasts longer and never frays. It is highly resistant to abrasion, perspiration, humidity, oil and grease.

When you purchase telephones, specify that they be equipped with TELECORD. On replacements use TELECORD for economy and service.

Always order TELECORD by name. Your independent telephone supply house can fill your orders promptly. Cords to fit all standard telephones are stocked.

WELL BUILT WIRES SINCE 1899

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NEW HAVEN 14, CONNECTICUT

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. . . With U.S. MICRO-POWER

BEFORE . . . voltage drops below a usable level . . . b e f o r e there is any loss of power to essential equipment . . . **MICRO-POWER IS IN ACTION.** Completely automatic, Micro-Power *operates with* the main source of power. No time-consuming "load transfers", no power "outages" . . . **EVEN FOR PRECIOUS SECONDS!**

Micro-Power is a complete stand-by service that replaces several units of costly, more complicated equipment. Electric plant, rectifier, battery banks and motor-generator **CAN ALL BE ELIMINATED** . . . with the installation of a single **MICRO-POWER UNIT. NEW INSTALLATIONS — SAVE UP TO $300 PER MILE!**

Write U. S. Motors for complete information, specifications and power curve charts.

UNITED STATES MOTORS CORPORATION
LIGHT US POWER
OSHKOSH • WISCONSIN

UNITED STATES MOTORS CORPORATION
558 Nebraska Street
OSHKOSH, WISCONSIN

becomes vice president, radio-television division.

Anthony G. Schifino, formerly general manager, sound division, becomes vice pres., sound division.

Philip J. Lucier, formerly manager of the telephone finance department, becomes assistant treasurer and manager, telephone finance department.

Arthur J. Fink, formerly general credit manager, becomes assistant treasurer and general credit manager.

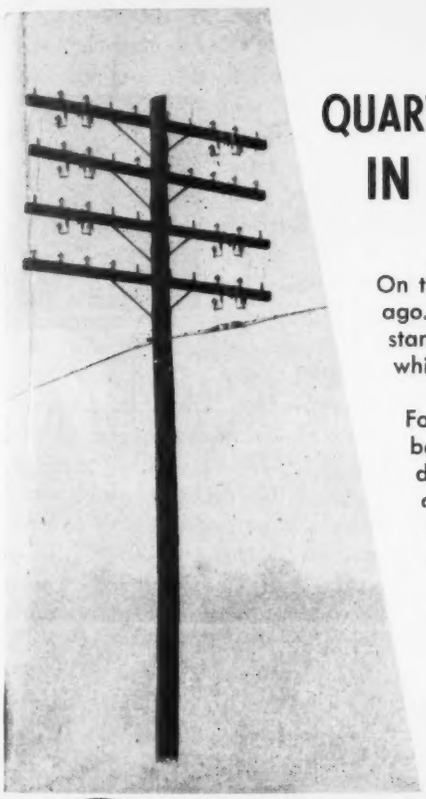
John H. Voss, vice-president, telephone division, joined Stromberg-Carlson in 1946 as head of circuit development and testing laboratory for XY dial and relay-dial systems. In 1948, he assumed responsibility for the direction of all phases of dial system engineering, in 1949 was appointed chief engineer of the telephone division, and in 1953 became general manager of this division. Mr. Voss has been in the telephone business continuously since 1920, having held important positions with the Automatic Electric Co., Chicago, prior to 1946. He holds 45 patents on various developments for telephone exchanges.

J. H. VOSS

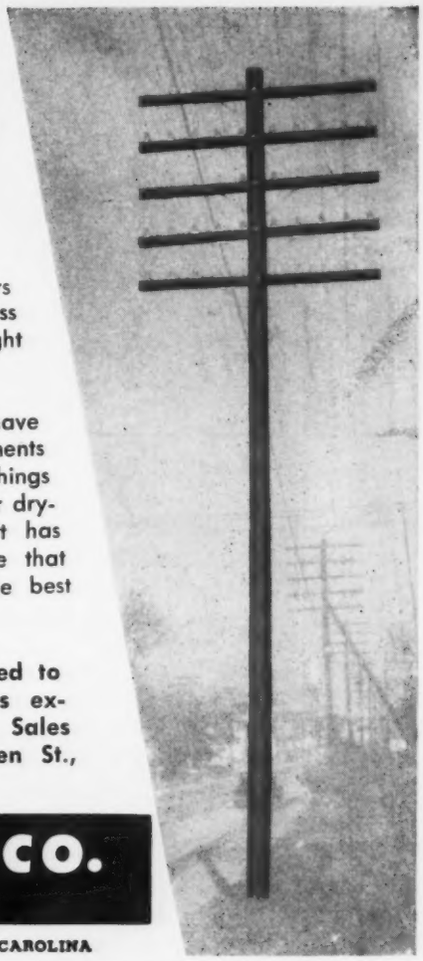
Clifford J. Hunt, vice president, radio-television division, had broad experience in all phases of retail merchandising before becoming a sales representative for Stromberg-Carlson in the Philadelphia territory in 1928. He moved to Rochester in 1941 to become distributor manager of radio products, was appointed general sales manager the following year, and general manager of the radio-television division in 1949. Mr. Hunt is well known throughout the radio-television industry as a merchandising expert, and is active in numerous national industry trade associations, including membership on the Executive Committee of the Set Division of the Radio-Electronics-Television Manufacturers Association (RETMA).

C. J. HUNT

Anthony G. Schifino, vice president, sound division, joined Stromberg-Carlson in 1929. Following two



MORE THAN A QUARTER CENTURY PROGRESS IN POLE PRODUCTION



On the left is a Taylor-Colquitt pole set 26 years ago. Still sound and serviceable, it nevertheless stands in sharp contrast with one on the right which was recently installed.

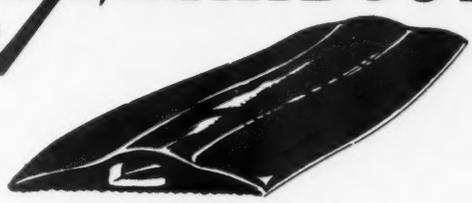
For to good timber and good treatment have been added many improvements and refinements during the years that have passed. In such things as timber selection, machine trimming, vapor drying and precise treatment, Taylor-Colquitt has set constantly higher standards to insure that Taylor-Colquitt poles shall always be the best that can be obtained.

Taylor-Colquitt poles are distributed to independent telephone companies exclusively by Automatic Electric Sales Corporation, 1033 W. Van Buren St., Chicago 7, Illinois

TAYLOR-COLQUITT CO.
SPARTANBURG, SOUTH CAROLINA

PLANTS AT SPARTANBURG, SOUTH CAROLINA AND WILMINGTON, NORTH CAROLINA

Do you know these facts about FLEXIDUCT?



It's the new rubber floor duct that solves over-floor wiring problems quickly and effectively, with adequate protection from sweepers, mops and equipment on casters. Installation is easy and permanent. You just fasten Flexiduct in place with its own special cement. There's no drilling or necessity to use screws and fasteners. Flexiducts' flexibility allows it to adhere evenly and securely to all types of floor surfaces and it is adaptable for installations ranging from 2 conductors to 25 pair switchboard cables. Write for complete information regarding Flexiduct and your wiring problem today.

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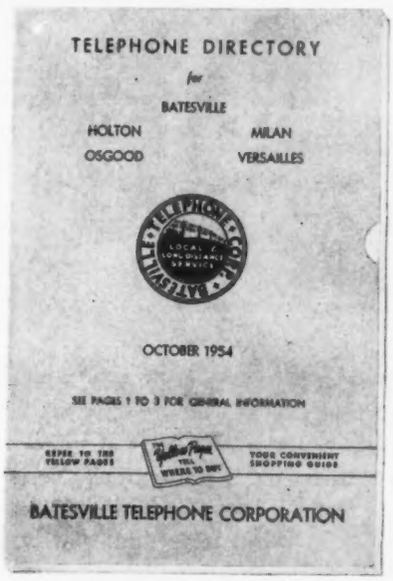
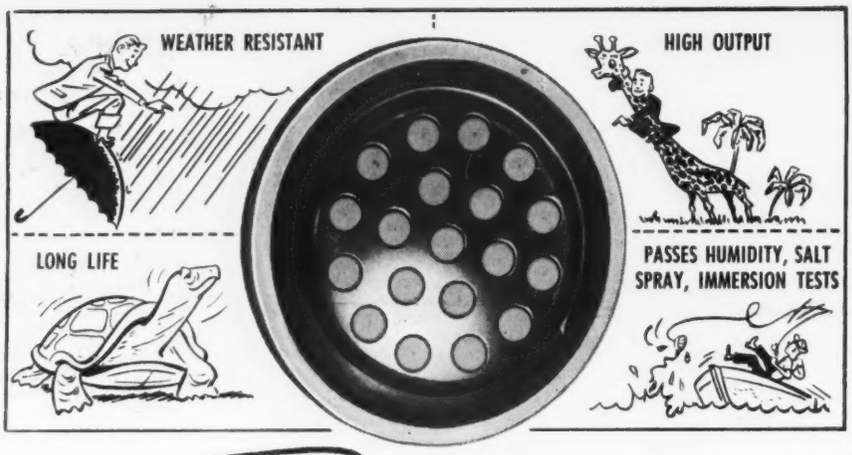
1250 KINNEAR ROAD Kingswood 0655 COLUMBUS OHIO



Batesville Telephone Corporation, Indiana directory printed by

R. R. DONNELLEY & SONS COMPANY
350 East Twenty-second Street, Chicago 16



Roanwell

CARBON MICROPHONE ELEMENT MODEL RF-1
STYLE No. 0037

Completely sealed with chemically inert materials, against all outside contamination; results in a minimum loss in output after extensive usage...Weather resistant; made to meet or exceed usual government specifications regarding humidity, salt spray and immersion... Electrically and mechanically interchangeable with all F-1 type transmitters.

WRITE FOR DETAILED DATA SHEETS

R/C Roanwell CORPORATION
662 PACIFIC STREET • BROOKLYN 17, N. Y.

Trustworthy

You'll get maximum protection against costly premature failures . . . when you have Armstrong Glass Insulators on your lines. They're precision made of tough industrial glass on completely mechanized modern production lines, and each insulator must pass rigid, individual inspection. For full details, write Armstrong Cork Company, Glass and Closure Division, 295 Fifth Avenue, New York 16, New York.

Armstrong GLASS INSULATORS
for communications . . . for power

years experience in the telephone laboratory and sales engineering department, he left the company to establish his own business, Sound Equipment Engineering Co., and later the Rochester Radio Supply Co. He severed his connections with the latter in 1940 to rejoin the Stromberg-Carlson Co., as chief sound equipment engineer, became manager of the sound equipment division in 1942, and in 1949 general manager of this division, which now occupies a large building on Clifford Avenue in Rochester. Mr. Schifino has served on many technical committees in national associations, and is well known as a leader in this fast-developing business. He lives at 33 Del Rio Drive with his wife and one son.

A. G. SCHIFINO

Philip J. Lucier began his service with the Stromberg-Carlson Company in 1946, following 10 years of telephone experience with the United Telephone Co., of Indiana, and four years of active duty with the U. S. Navy in both Atlantic and Pacific theatres during World War II, attaining a Lt. Commander commission. He was assigned the south eastern states as a sales representative of the telephone division, and in 1950 moved to Rochester to become manager of the telephone finance department, and vice president of he Stromberg-Carlson Credit Corp.

P. J. LUCIER

Arthur J. Fink joined Stromberg-Carlson in 1945, following 14 years experience with Shields & Company, George D. B. Bonbright, and Dun & Bradstreet, Inc. His experience at Stromberg-Carlson has included special credit representative, assistant credit manager, asisstant general credit manager, and general credit manager, since 1952. Mr. Fink has been active for many years in local and national credit and finance associations.

A. J. FINK

announcing

MODEL TCR-12

RAYTHEON **TELELINK**

- Easily and quickly installed. Eliminates costly wire line construction and maintenance.
- Ties in directly with any standard telephone system.
- Handles all telephone functions without modification.
- Trouble-free operation in all weather.
- Long-life circuits with automatic self-tuning after power or maintenance shutdown.
- Range up to 50 miles.
- Designed in cooperation with REA to meet FCC specifications.
- Operates on standard utility power.

A NEW MICROWAVE SYSTEM Engineered to Extend Rural Telephone Service at Low Cost

For the first time in the industry, Raytheon TELELINK provides simple, single-package equipment perfected expressly to expand telephone service in areas where rugged terrain, isolation and severe weather make regular line service too costly, too difficult to install and maintain.

TELELINK in all respects meets the standards of first class telephone service by relaying all regular functions such as dialing, ringing and busy signals without modification of existing equipment.

Expanding your service? Save money on installation and upkeep with Raytheon TELELINK, the practical system tailor-made to provide rural service at its finest.

DETAILED INFORMATION for YOU . . . a new brochure with complete data on Raytheon TELELINK. Write for it.

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Specialists in Microwave
for the Telephone Industry

RAYTHEON MANUFACTURING COMPANY
Equipment Sales Division
WALTHAM 54, MASSACHUSETTS

Robert C. Tait Elected Ritter Co. Director

ROBERT C. TAIT, president of Stromberg-Carlson Co., Rochester, N. Y., last month was elected to the board of directors of Ritter Co., Inc.

Mr. Tait, a native Rochesterian, attended the Rochester public schools, Mohegan Lake Preparatory School at Mohegan Lake, N. Y., and Princeton University, where he graduated with a Bachelor of Arts degree in 1922.

Following his graduation from college, Mr. Tait had broad experience in sales, sales management, advertising, and manufacturing (1922-34) before entering the financial field, where he joined the Genesee Valley Trust Co., Rochester, as assistant trust officer in 1935, and in 1940 was appointed vice president of this bank. In 1945, he joined the Union Trust Co., Pittsburgh, pa., as vice-president, and the following year became vice president of the Mellon National Bank & Trust Co. of that city, a position he held until joining Stromberg-Carlson in 1949.

R. C. TAIT

Mr. Tait is a trustee of the Rochester Chamber of Commerce, director of the Rochester YMCA, director of the Rochester Community Chest, and member of the Founders Committee of The Rochesterians. He is also a member of the Princeton Club of New York City, University Club of New York City, Rolling Rock Club of Pittsburgh, Genesee Valley Club of Rochester, Country Club of Rochester, and the University Club of Rochester.

Mr. Tait is chairman of the finance committee, and trustee of the National Planning Association, director of the Radio-Electronics-Television Manufacturers Association (RETMA), director of the U. S. Independent Telephone Association, and a director of the Garlock Packing Co., Palmyra, N. Y. His other

L-M Announces Engineering and Sales Changes

CHANGES IN Line Material Company's engineering and sales departments have been announced by A. G. Steinmayer, vice president for engineering, and R. G. Wheaton, vice president for sales and marketing.

Richard C. Kirk, formerly manager of Kyle products sales, has been promoted to chief engineer, Kyle Products Plant. He assumes the engineering responsibilities for Kyle reclosers, sectionalizers, and oil switches, and for new product development. Mr. Kirk succeeds Anthony F. Van Ryan who will continue to serve L-M as a new product consultant. Frank W. McStay has been advanced from apparatus engineer in L-M's North Central Division to manager of Kyle products sales.

R. C. KIRK

Mr. McStay joined Line Material in 1947 after several years as a switchgear engineer. He served initially as assistant to the manager of transformer sales, later became a field engineer in the company's South Atlantic Division, and in 1950 moved to the apparatus engineering position that he held until his recent promotion. An electrical engineering graduate of the University of Wisconsin, McStay is a registered professional engineer in Minnesota and a member of AIEE.

F. W. McSTAY

Mr. Van Ryan joined the Kyle Corp. in 1941 after about 20 years of switchgear engineering experience. In 1943 he was appointed chief engineer, and when Kyle Corp. merged with L-M in 1948, he was assigned additional duties as director of new product development. Widely known in industry circles for his participation in engineering activities, Mr. Van Ryan presently is a member of several AIEE and NEMA committees. He also is a chairman of the AIEE Subcommittee on Automatic Circuit Reclosers and Automatic Line Sectionalizers, chairman of NEMA members on the EEI-NEMA Joint Committee on Oil Circuit Reclosers, and chairman of the NEMA Working Group for Standards for Line Sectionalizers.

A. F. VAN RYAN

Construction and

WITH THE DOUBLE

STROMBERG-CARLSON

LEADING

gould planté . . .

the aristocrat of stationary batteries

Many Planté batteries are still in active full-float service after twenty, thirty, even forty years! That's because Planté plates are heavy, solid sheets of pure lead. In these batteries Gould has eliminated the primary cause of self-discharge, capacity losses and shortened battery life. Cut maintenance, charging and replacement costs to a minimum. Choose Planté.

Made by
GOULD-NATIONAL BATTERIES INC.

...materials
...d Supplies
...BLE GUARANTEE OF
...SON AND AMERICA'S
...ING MANUFACTURERS

here's how the 3-phase

flotrol automatic battery charger

reduces operating costs!

Model 2500-B
50 Amps., 50 Volts

GREATER POWER SAVINGS—The unusually high efficiency of this 3-phase self-contained unit (50% at 10% of rated load and 75% at 40% rated load), results in continuous power savings to the FLOTROL user, sufficient to pay for the unit in less than its anticipated life.

REDUCED MAINTENANCE COSTS—The FLOTROL contains no moving parts; once installed, requires no further attention.

MAXIMUM BATTERY LIFE—By floating the battery at constant voltage, battery activity is reduced to a minimum.

DC voltage delivered is regulated within 1%. Complete overload protection is as automatic as charging itself.

WRITE for Bulletin 161—completely describing the FLOTROL system for 3-phase operation.

the new **cane** *seat is cooler - cleaner - more comfortable...*

sturgis SC-240

Literally "by request"—this new operator's chair retains all the posture advantages for which Sturgis is famed and adds the cool, clean comfort of a *cane* seat. The posture-curved, well-cushioned back rest is covered in genuine leather.

The exclusive Sturgis "Follow-Flex" feature automatically adjusts to the operator's every movement, supports her restfully all the time, discourages fatigue, keeps her at top efficiency.

Other new and welcome features include a plastic-coated steel foot ring which retains its color and a handy purse holder, available on request. Six seat heights, all adjustable.

Mfd. by Cook Electric Co.

something new in sub-station

protectors

The Cook type RO-9u Sub-station protector has a rugged all-metal housing in which are mounted the A-9u 7 amp. fuses and the line and surge arresters.

This protector meets all requirements of the Underwriters' specifications and is listed by the Underwriters' Laboratories.

Insulation is of high impact bakelite, and secondary surge arresters furnish high voltage protection when fuses are blown or removed.

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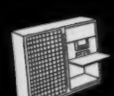

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Electronic Carillons for Churches and Public Buildings

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SEND IT *Written* OVER *Desk-Fax*

The New Method of Intercommunication!

This unique business aid changes the whole concept of office and industrial intercommunication. Now *written* messages can be transmitted electronically between any two locations connected by a telephone wire . . . in the same building . . . or miles apart! Just type, write, print or draw in pen or pencil on the sending blank, slip it around the cylinder and press a button. In two minutes the sending Desk-Fax produces an accurate facsimile of the message at the receiving Desk-Fax. No other equipment is needed . . . each unit serves as transmitter and receiver. No operating noise . . . no special processing of message blanks. Sender keeps his original . . . addressee has a permanent facsimile for filing or rerouting. Desk-Fax, product of Creed & Company, Ltd., associate of International Telephone & Telegraph Corporation, illustrates ISE's policy of offering the most advanced, the finest products and equipment in every field of communications. Whatever *your* requirements in communications—look first to ISE!

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Central telephone exchange equipment for installations of any size, automatic or manual.

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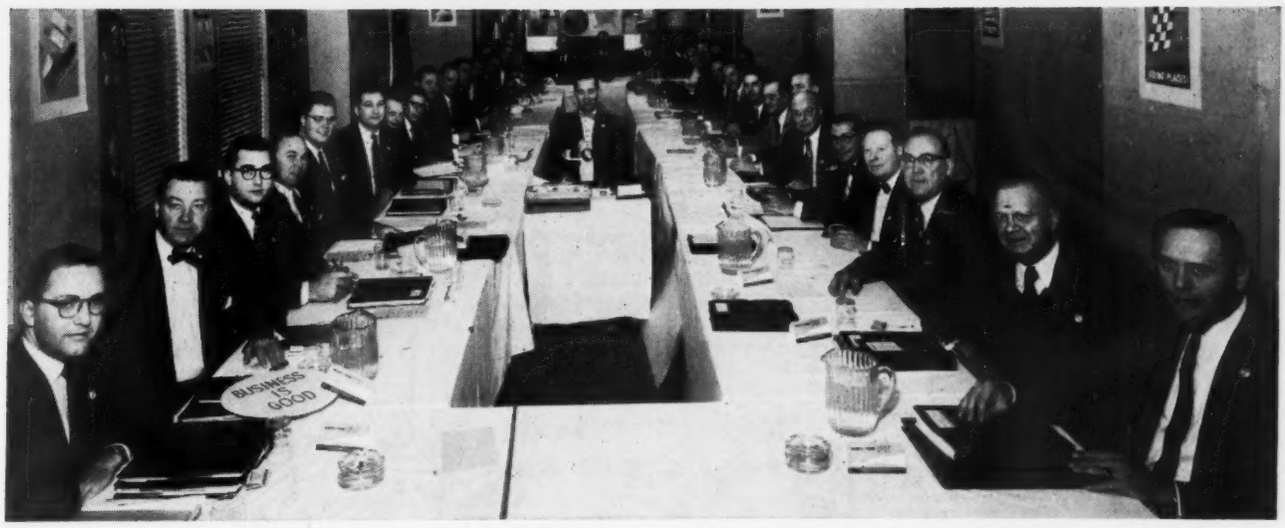


L. M. BERRY SALES CONFERENCE: — (L. to R.) — JOHN W. BERRY, H. F. SCOTT, N. E. ROBINSON, E. F TINNERMAN, J E. WHALEN, M. F. FEENEY, J. J. MULLIN, R H. ESHELMAN, H. C. EVANS, S. H. RAINEY, L. E. GETZLER, K. R. JEFFERS, J. C. GRIMES, J. D. BECKMAN, C. SCHMANKE, J. M. BAYLEY, E. G. PERLEY, T. A. CALHOUN, W. L. WOLCOTT, H. C. HULL, MISS GERI McALPIN, R. W. BRUNDIGE, H. L. BOEBEL, R. T. DAVIS, C. S. AUCOIN, B. D. ADDINGTON, W. C. WELCH, J. P. WHITE, J. Z. WILSON, W. A. STEUER, R. A. MANER, W. J. McGIRL, F. L. HAWKER, LOREN M. BERRY, J. W. CRAIG, JR. P. ENGLE in center.

L. M. Berry & Co. Holds Sales Conference

"GET IN GEAR, It's L. M. Berry Year" is the theme commemorating the 45th anniversary of L. M. Berry & Co. This was announced at the Sales Managers' Conference held on December 6, 7, and 8, 1954, at the Biltmore Hotel, Dayton, Ohio, where 39 territory and division managers and their assistants met with the general sales staff to discuss company plans and policies for 1955.

On the opening day of the conference, John W. Berry, general sales manager, keyed the meeting to the announcement of the theme and discussion of the objectives of the company for 1955. In reviewing the growth of the company during the past 45 years, it was pointed out that 32 new directories had been added during the past year which now brings the total number over 935. These directories represent over 250 Independent and Bell Telephone Companies in 29 different states. Because of the company's expansion the total personnel had been increased 24.8% for the year.

In Mr. Berry's talk, "The Road Ahead in 1955," he emphasized that "quality" should be attained on every job in 1955. He also discussed the responsibilities of managers and salesmen in promoting and maintaining good relations between the public, the subscribers, and the telephone company.

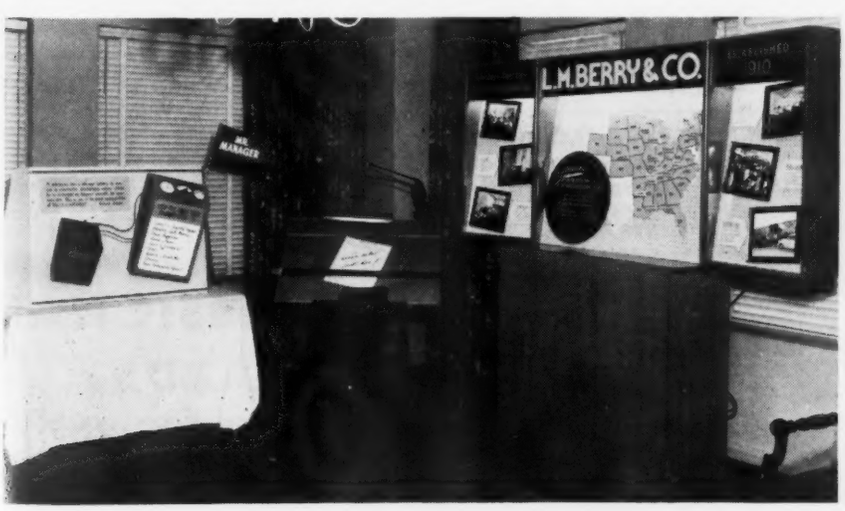
Willard L. Wolcott, personnel and training director, reviewed the personnel picture and reemphasized the need of following the employment procedures and practices set up for all managers.

He also outlined a new training and retraining program in which centralized initial training would be set up in the Dayton offices.

J. Wm. Craig, Jr., General Sales Supervisor, in leading the discussion on "First Line Supervision," pointed out the necessary basic jobs and responsibilities of the supervisors. "Copy and Art Requirements" was also presented by Mr. Craig with the assistance of Phil Engle, general art director.

The 1955 promotion, the most extensive in the company's 44-year history, was revealed and explained by R. W. Brundige.

The automotive motif was used throughout the meeting, which ties in with the theme and promotion for 1955. A model of a high-powered modern car, representing the Berry Machine for 1955, was on display and as the program progressed, each speaker built up the machine with parts related to his topic.



ERRY SALES CONFERENCE: — View of one section of the L. M. Berry & Co. conference room showing a few of the many displays which were made up for the occasion.

Homelite Corp. Advances McDonald and Newman

J. A. ABBOTT, president of the Homelite Corp., Port Chester, N. Y., has announced the election of Richard C. McDonald as vice president in charge of manufacturing, and Albert K. Newman as vice president in charge of engineering.

Mr. McDonald is a graduate of Michigan State College and was formerly associated with the Ford Motor Company's manufacturing di-

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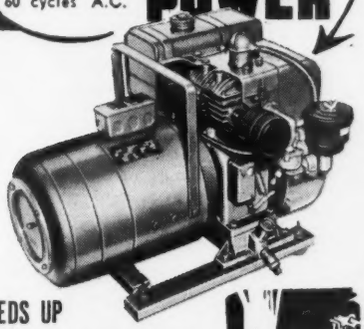

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vision. He joined Homelite as a salesman in 1937, was made manager of the Chicago sales office in 1939, and transferred to the engineering department in 1941. Two years later he became assistant factory manager, and was appointed Homelite's factory manager in 1946.

Mr. Newman has been Homelite's chief engineer since 1948. He attended Washington & Lee University

HOMELITE ELECTS: R. C. McDONALD (left) Homelite Corp.'s newly-elected vice president in charge of manufacturing. A. K. NEWMAN (right) was recently elected vice president in charge of engineering.

in Lexington, Va., and holds a Bachelor's and Master's degree in Electrical Engineering from Massachusetts Institute of Technology. In 1942, Mr. Newman joined Homelite as a project engineer after 16 years as design engineer with the Electric Specialty Co.

Both men are well-known for their active participation in profesesional societies. Mr. Newman is a registered professional engineer in the state of Connecticut and a member of the American Institute of Electrical Engineers. Mr. McDonald holds membership in the Stamford Engineering Society and the American Management Association.

Kellogg Names Marlowe Elmira Representative

O.C. BAILEY, assistant sales manager, Kellogg Switchboard & Supply Co., Chicago, has announced the appointment of Roy R. Marlowe as field representative with headquarters in Elmira, N. Y.

Mr. Marlowe will serve under the direction of John T. Robertson.

Raytheon Releases New Brochure on Microwave

THE RAYTHEON Manufacturing Co., recently released a new 8-page brochure describing the company's KTR-100A Television Microwave Relay equipment.

Copies of the brochure may be obtained by writing for Bulletin 3-110, Raytheon Manufacturing Co., Dept. 6130, (TE&M) 100 River St., Waltham 54, Mass.

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ADVERTISING, Directories — *General Telephone Directory Co., 604 Pine Ave., Long Beach, Calif., and 1800 Busse Highway, Des Plaines, Ill.*—[ADV. 2]

BELTS — CLIMBERS — COMPLETE LINEMEN'S EQUIPMENT, *W. M. Bashlin Co., Bashlin Bldg., Grove City 1, Pa.*—[ADV. 3]

BELTS — CLIMBERS — PLIERS — SAFETY STRAPS — CONSTRUCTION TOOLS. *Klein & Sons, Mathias. 3200 Belmont Ave., Chicago 18, Ill.*—[ADV. 4]

BOOTHS—Acoustic Telephone — *Sherron Metallic Corp., 1202 Flushing Ave., Brooklyn 6, N. Y.*—[ADV. 5]

BRUSH & WEED KILLERS — *Thompson manufactures many types of brush and weed killers. Write for helpful information on specific problems. Thompson Chemicals Corp., St. Louis 3, Mo.*—[ADV. 6]

CABLE, All Plastic, *Aerial, Duct, Direct Burial, PBX, Switchboard. — The Ansonia Wire & Cable Co., Ansonia, Conn.*—[ADV. 7]

CLIP — Modern Lineman's Needle Clip. Free catalog #AA588 and free samples from: *Mueller Electric Co., 1588AA E. 31st St., Cleveland 14, Ohio.*—[ADV. 8]

CORDS, Switchboard (with or without plugs), Instrument (retractable and regular) and Operators — *Commercial Cord & Supply Co., Inc., 26 Main St., Clifton Springs, N. Y.*—[ADV. 9]

CORDS, Switchboard & Telephone — *Runzel Cord & Wire Co., 4727-31 Montrose Ave., Chicago 41, Ill.*—[ADV. 10]

ELECTRIC HOT WATER HEATERS. *Thermostatically controlled for any hot water heater. Vulcan Electric Co., Danvers 17, Mass.*—[ADV. 11]

FURNACES — For quickly and economically melting lead and paraffin — *Mutual Liquid Gas Equipment Co., Inc., 3600 W. Imperial Highway, Los Angeles, Calif.*—[ADV. 12]

INSULATORS, Porcelain — *Porcelain Products Inc., Box 300, indlay, Ohio.*—[ADV. 13]

LIGHTWEIGHT PULLERS — *Coffing Hoist Compan, 800 Walters St., Danville 5, Ill.* — [ADV. 14]

PIPE PUSHERS — *Giant Manufacturing Co., South 6th St., at 12th Ave., Council Bluffs, Iowa.*—[ADV. 15]

POLE HOLE DIGGERS — *For derrick mounted trucks. Tele-E-Lect Products, Inc., 9613 Minnetonka Blvd., Minneapolis 16, Minn.* —[ADV. 16]

POLES, Southrern Yellow Pine — *Colfax Lumber & Creosoting Co., Inc., P. O. Box 23, Pineville, La.*—[ADV. 17]

POLES, Southern Yellow Pine — *Taylor Colquitt Company, 290 E. Main St., Spartanburgh, S. C.*—[ADV. 18]

POLES, Southern Yellow Pine — *Texas Creosoting Co., Orange, Texas.*—[ADV. 19]

PROTECTIVE EQUIPMENT — *Reliable Electric Company, 3145 Carroll Avenue, Chicago 12, Ill.*—[ADV. 20]

REBUILT TELEPHONE & SWITCHBOARDS — *Telephone Repair & Supply Company, 1760 Lune Avenue, Chicago 2, Ill.*—[ADV. 21]

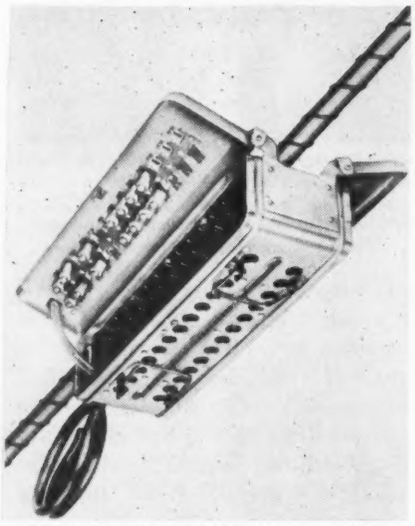
TRUCK BODIES — *Highway Trailer Co., Edgerton, Wisc.*—[ADV. 22]

WIRE, Insulated — DATED DROP WIRE — Neoprene or Weatherproof — *Alphaduct Wire & Cable Co., Milltown, N. J.*—[ADV. 23]

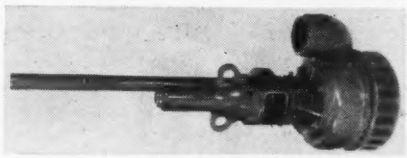
WIRE, Insulated Drop and Bronze or Copperweld — *Acorn Insulated Wire Co., Inc., 36 Freeman St., Pawtucket, R. I.*—[ADV. 24]

WIRE, Telephone, for all inside and outside uses — *Whitney Blake Co., New Haven, Conn.*—[ADV. 25]

NEW PRODUCTS' SHOWCASE



COOK 26-PAIR STRANTERM: — Cook Electric Co., Wirecom Division, Chicago 14, Ill., has announced a new 26-pair Stranterm. This is a strand mounted cable terminal which enables the installer to work close to the pole and features the embossed Minigap snap-in sockets, spring bronze ground strip and neoprene self-adhering drop-wire entrance seal. The terminal housing is of heavy gauge metal with a weatherproof, grounded, hinged cover with quick-opening lock and a hold-open catch. All terminals are supplied with 3½ foot, 24 guage lead or plastic cable stubs which are soldered to heavy studs imbedded in a special unsaturated Polyester thermal setting plastic.—For complete data, Check New Product 690.



SUMP PUMP:—Schramm, Inc., West Chester, Pa. has announced production of a pump to remove water from trenches and excavations. The Schramm pneumatic sump pump can be dropped in water, eliminating priming; it can be operated by any 105 or 125 c.f.m. compressor, which usually is already on the trench or excavation job, and is always available nearby; it is small and light weight, easy to transport to the job, and requiring small space for storage when not in use.

The Schramm sump pump is designed with exceptionally large capacity, so that dewatering can be quickly accomplished. A bulletin describing this pump is yours for the asking.—Check New Product 691.

AERIAL TENT: — A new 1-man tent of translucent plastic for telephone and utility line crews has been announced by Plastimayd Products Corp., Portland, Ore.

The new shelter was developed in close cooperation with safety supervisors. For aerial work, splicing, or as a manhole cover it is far superior to canvas. It is lighter in weight, easier to handle, offers excellent protection and permits full transmission of daylight for the work at hand.

Weighing only 13 pounds, the plastic tent is easily erected or taken down by one man. It is completely waterproof, won't burn, and is impervious to deterioration from acids, oils and gasoline. All seams are electronically

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welded and strain points are reinforced. Brass grommets and rope loops are provided for tying down.

Made of specially-formulated Bakelite Krene, the tents are easily cleaned by washing with soap and water. They can be stored away wet without danger of rot or mildew.

Excellent high-voltage protection is provided by the high dielectric strength of 9,600 to 16,000 volts, depending on thickness of the material. Insulation resistance has been measured at 1.4 x 10^6 megohms per cu. cm.

A larger size tent for 2-man splicing crews and for covering extension ladders and "Baker" boards is also being manufactured.—For complete details and specifications, Check New Product 692.

PORTABLE ELECTRIC DRILL:—A new portable electric drill incorporating ten advantages usually found only in more expensive models is being marketed in the low price category by Porter-Cable Machine Co., Syracuse, N. Y.

According to the manufacturer, the Model 137 quarter-inch drill with its attachments is one of the most versatile machines available. Using high speed twist drills it quickly penetrates wood, steel and other metals, plastics, all types of composition board, and even concrete. Using abrasive discs, this same tool sands wood or metal, removes paint and varnish. A wire brush attachment removes rust from tools and other equipment. A special bracket and grinding wheel converts the drill into an electric bench grinder. A 5-inch lamb's wool bonnet equips the drill for waxing and polishing. A cloth buff enables it to polish metal articles.

The Model 137 Porter-Cable Drill offers these 10 features: A universal AC-DC 115-volt motor provides power; spur-type reduction gears are designed for a long life of sturdy performance; an idling speed of 2300 RPM is suitable for the broadest number of uses.—Check New Product 693.

1500 pounds

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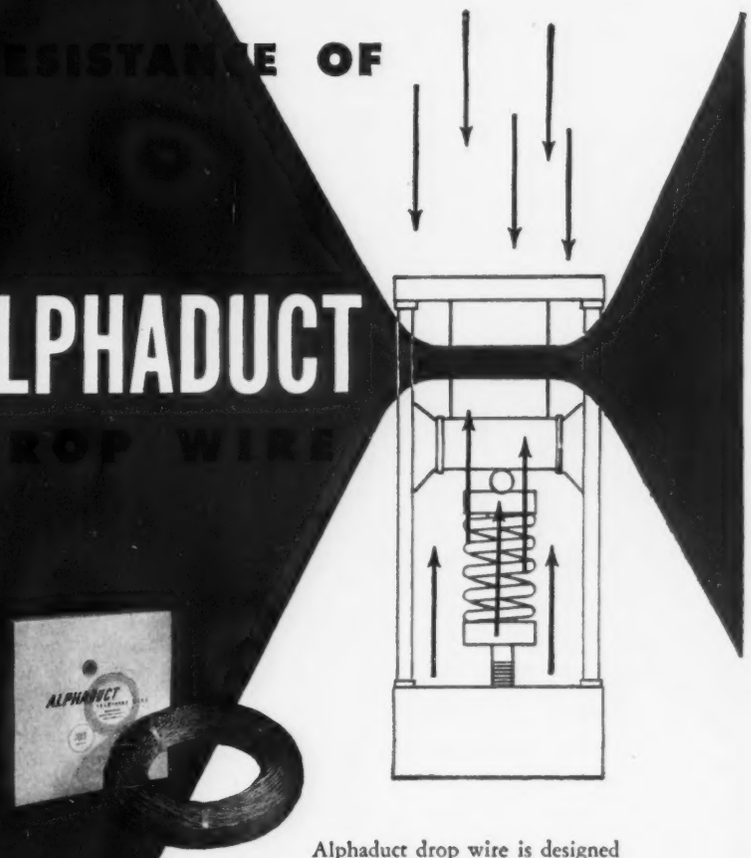

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Loud ringing bells, 1000 or 2500 Ohm @ $8.00 each. With Condensers @ $9.00 Each.
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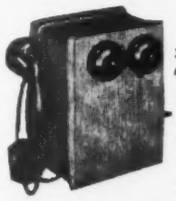

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4 or 5 Bar. 1600 or 2500. @ $20

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FOR SALE:

NEW, Surplus Cable Splicers Oak Platforms, size 38" x 54" complete with eye bolts and guy lines.

SPECIAL PRICE—while they last—$14.00 each

NEW: Splicers tent bows complete with all hardware, less canvas $4.00 each.

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For Sale—While they last

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WESTERN ELECTRIC 701A AUTOMATIC SWITCHBOARD

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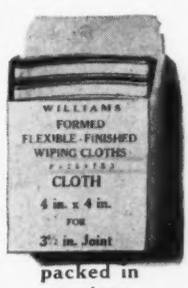

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tubular, fiber for use with 98A substation protector, etc.
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New (sealed cans of 20) per fuse 7¢
hundred lots $6.00; thousand $50.00

W.E. #98A Protector, new $1.00
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— large stock of MDF protectors —

SWITCHBOARD LAMPS

W.E. K-1, 30 volt, .035-.045 amp.
(ideal for 24 volt board)
factory packets of 5 lamps, per lamp....15¢
cartons of 100 (20 packets) per lamp....12¢
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LAMP CAPS — Kellogg

154, white .....8¢
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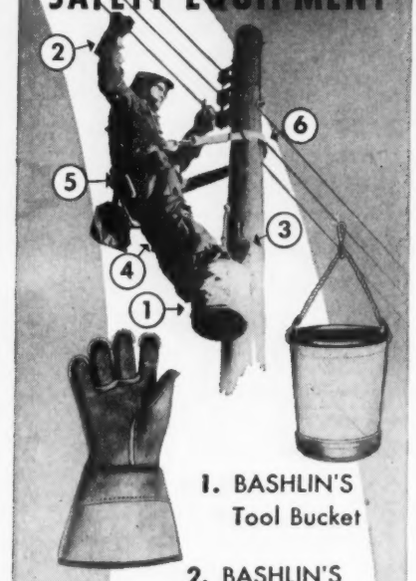

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5. BASHLIN'S Safety Belts
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WRITE TODAY for this CATALOG

W. M. BASHLIN CO.
GROVE CITY, PA.

Eugene A. Reinke Dies

EUGENE A. REINKE, who retired on January 1, 1949 as commercial sales manager of the Stromberg-Carlson Telephone Division, died at home, Rochester, N. Y., on December 12, 1954.

Mr. Reinke was born and educated in Chicago, and was 74 years old at the time of his death. When he retired, Mr. Reinke had completed 48 years service with the Stromberg-Carlson Co. He was employed in 1901 by the late Alfred Stromberg before the company moved from Chicago to Rochester, N. Y. A well knwn personality throughout the entire telephone industry for years, Mr. Reinke served his company in many important capacities, including chief engineer, chief sales engineer, telephone sales manager, and commercial sales manager. He will also be remembered by his friends as an ardent golfer and winner of several tournaments.

E. A. REINKE

LESLIE CLIFFTON WHITNEY, manager of Development Engineering of Copperweld Steel Co., Wire & Cable Div., has been elected president of the Wire Association. International in scope, the Wire Association membership of 1100 covers the United States and 26 foreign countries. It is made up of manufacturers, fabricators, and suppliers in the wire industry. Mr. Whitney has been associated with Copperweld Steel Co. since 1930. He is a graduate of Lehigh University, with a degree in Metallurgical Engineering. Several years ago he was chairman of the Pittsburgh Chapter of the American Society of Metals.

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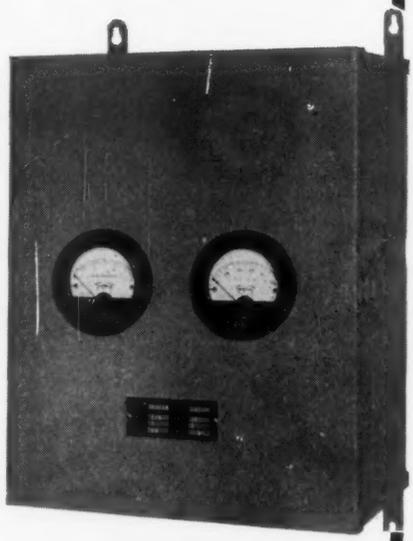
and Years-
and Years-
of Service!



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transmitter

Published by the famous makers of XY® Equipment

VOL. 3, NO. 10 JANUARY, 1955

New Mylar* Tape Insulated Switchboard Wire

by Ernest W. Goral, Materials Engineering Dept.

Production of insulated telephone switchboard wire, measured at Stromberg-Carlson in hundreds of miles each week, is continually being studied with a view to improving quality and production rate of this essential item vital to the communications industry.

General Requirements for Switchboard Wire

Every operating company recognizes the critical part which insulation provides for trouble-free operation of its equipment. Because of the exacting requirements of telephone systems and particularly the inherent dangers from faulty insulation in unattended dial systems, it is necessary that insulated wires meet all the electrical, physical, and handling requirements in every detail. Numerous types of insulated wires commercially available were evaluated and found unsuitable for lacking one or more of the following qualities:

1. Concentricity and uniformity of insulation thickness
2. Heat resistance
3. Flame resistance
4. Abrasion resistance
5. Compression resistance
6. Cold flow resistance
7. High electrical insulating characteristics
8. Distinct color coding
9. Small outside diameter
10. Ease of stripping and soldering

Necessity for Special Insulated Wire

It readily became apparent that a special wire had to be designed to meet these specified requirements, and to this end Stromberg-Carlson found it necessary to produce its own insulated wire under rigid specifications for assurance of highest quality wire in its switchboard equipment.

In 1946, the company pioneered in the development of a switchboard wire consisting of tinned copper wire, one serving of Cellulose Acetate Butyrate (C.A.B.) Tape, one serving of color-coded cotton yarn and an outer flame-resistant lacquer finish, thus achieving through this construction, a wire conforming well within the specifications enumerated above.

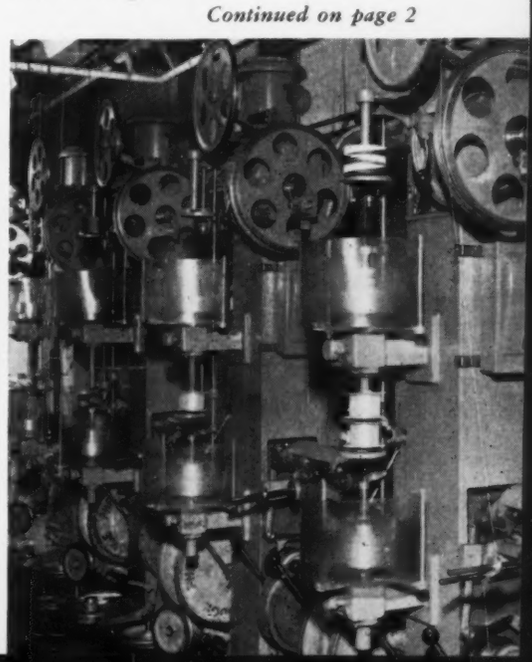
Expansion to Meet Demands

With recent expansion and modernization programs undertaken by progressive telephone operating companies throughout the country, Stromberg-Carlson once again found it necessary to re-evaluate the type of wire to be used in these systems. Although C.A.B. Tape insulated wire was satisfactory in all respects, it could not be produced in sufficient quantities on available production facilities to meet the increased demand for local and machined cables. During the past two years, a considerable amount of developmental work was conducted with Mylar Polyester Resin Film Tape — a newly developed film product of E. I. du Pont de Nemours & Co. (Inc.). This tape, having one-half the thickness but twice the tensile strength properties of C.A.B. Tape, increased the production rate of the wire insulating machines from 35 to 46 per cent. Quality of switchboard wire was not sacrificed, since Mylar Tape also contributed superior electrical insulating properties along with its physical properties.

This new wire consisting of Mylar Tape, cotton served, and flame-resistant lacquer finish has undergone extensive tests in the Physical Testing Laboratory for several years. Data have been carefully considered in every respect and correlated with requirements and conditions for humid areas. Test results show that this style of construction has satisfactorily answered the problems of production, installation, and operation of switchboard equipment.

One of the highlights of these tests shows an improvement in insulation resistance after humidity from 10,733 meg. for C.A.B. Tape to 29,666 meg. for Mylar Tape. Information on other test results can be supplied to interested parties.

Continued on page 2



*Registered trade-mark of E. I. du Pont de Nemours & Co. (Inc.)

STROMBERG-CARLSON transmitter

New Switchboard Wire

Continued from page 1

Advantages:

Mylar Tape provides the following commendable qualities and advantages to switchboard wires, local and machine cables and circuit plate point-to-point wiring:

1. Increases wire production.
2. Improves electrical characteristics in humid climates.
3. Improves the physical characteristics of wires and cables by providing a tough, flexible, and heat-stable primary insulation. Local cables can be produced and installed without fear of wires being damaged when bent or drawn over sharp corners. Also this physical toughness is particularly advantageous in point-to-point wiring of circuit plates.
4. Reduces outside diameter of finished wire by approximately 5 mils. Smaller sizes of local and machined cables will be available for applications where space is of prime importance.
5. Exhibits good aging qualities. Wires wound over small mandrels and subjected to oven aging tests showed excellent electrical and physical characteristics.
6. Provides a fungus inert primary insulation.
7. Provides a primary insulation (melting point 482°—492°F) which can be soldered through without stripping. This feature can only be utilized when the outer cotton covering has previously been pushed back or re-removed.

While Mylar-insulated switchboard wire seems to have answered the present need for increased production and improved quality, the Materials Engineering Department will continue investigating new materials and methods to incorporate further improvements in its wires, cables and switchboard equipment.

Ancher Nelsen ushers in Missouri's first REA conversion—XY® dial at Steelville

A visitor in Steelville, Missouri, last November 17 might have thought the calendar was playing tricks. Surely the parade, with the high school band leading the way for eye-catching floats, indicated the Fourth of July. But the solemn commemorative service conducted by the Baptist minister pointed toward Memorial Day. And yet the 3000-plate barbecue served at V. F. W. Hall had the gay spirit of Labor Day or the opening of a traveling circus. Yes, Steelville celebrated on November 17!

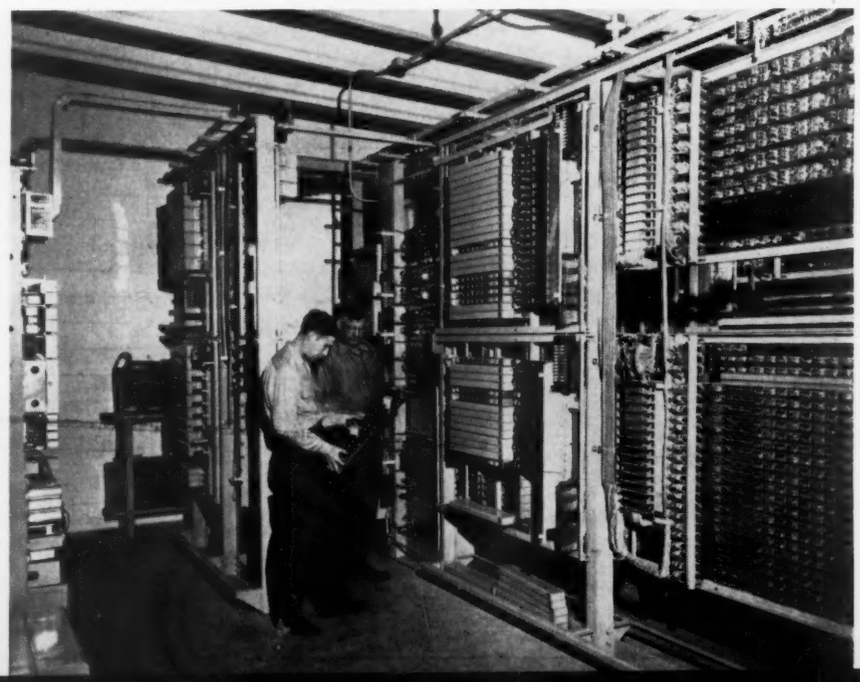
It was significant that this year, marking the 50th anniversary of the telephone in Steelville, saw the completion of the first REA financed dial conversion program in Missouri — an XY dial office presently serving over 625 subscribers, 200 of whom had never had telephones before.

In a ceremony before an overflow crowd in the high school auditorium Ancher Nelsen, REA Administrator, spoke of the "festivities" as the biggest of their kind he had ever attended. He drew attention to the $7,000,000 in REA loans already allotted to Missouri, and said that this year more loans had been approved than in all the previous four years. Nelsen also presented a certificate of quality service to Mr. S. H. Hicks, president of the Steelville Telephone Company.

An unusual part of the program was the full-dress burial of "Old Crankey," the magneto telephone, with a moving eulogy by the Reverend Renfrow. This was followed by an even more unique featured event — dynamiting the replaced magneto switchboard. Steelville had crossed its Rubicon, burning its bridges behind, as it entered the world of dial.

James D. Worley, generally known as Dan, is happy in the opportunity to manage this fine exchange. He, like so many other managers entering upon a dial conversion program, took the training offered by Stromberg-Carlson Company in the XY Training School. The city can rest assured that Dial Day, so well celebrated, is the beginning of a new half century of telephone service — different because these days are different — but fully as rewarding as the last.

James D. Worley (left), manager, and S. H. Hicks, president, check last minute details in preparation for Dial Day at Steelville, Mo. Harry Hodgson was installation foreman.



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Jack Tucker greets throng of visitors in the XY room at Crossett . . .

Amazing Town:

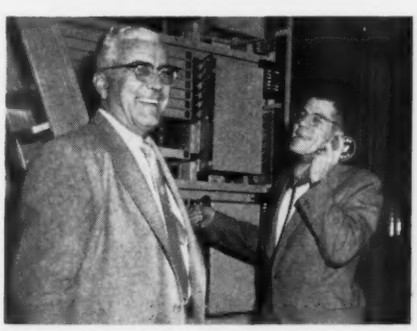
What Happened to Crossett, Arkansas?

. . . on cutover day.

How would you like to live in a town where you pay no taxes, have somebody else do all your housepainting and repair jobs for free, get almost free medical service, and pay only a very small rent?

Citizens of Crossett, Arkansas, lived under these idyllic conditions for 47 years. Founded in 1899, their town was completely owned and operated by the Crossett Lumber Co. for its employes. The Company owned every house and every inch of land, did everything from repairing the streets to paying the town's taxes.

R. D. "Jack" Tucker, manager.



At Crossett's new XY equipment: Warren G. Bray, Southwestern Bell Telephone Co., Little Rock, Ark., and (right) P. F. Watzek, president of Crossett Industries.

But in 1946, an amazing thing happened to Crossett. Turning their backs on a dreamlike paradise that gave them everything except the pride that comes with independence, the townspeople accepted the lumber company's offer to sell the town to its residents.

966 of the 967 families bought their homes from the company, and immediately set about beautifying the property. Half of them went out and bought colorful new house paint to replace the standard gray and white that was the trade-mark of the old "company town."

Miss Carrie Calhoun, the elementary school principal, was the only person unable to purchase her home. With a magnificent display of their new civic spirit, Crossett's townspeople pooled their funds and bought her home for her. They presented the deed to her on the last day of school, just as she was about to enter retirement.

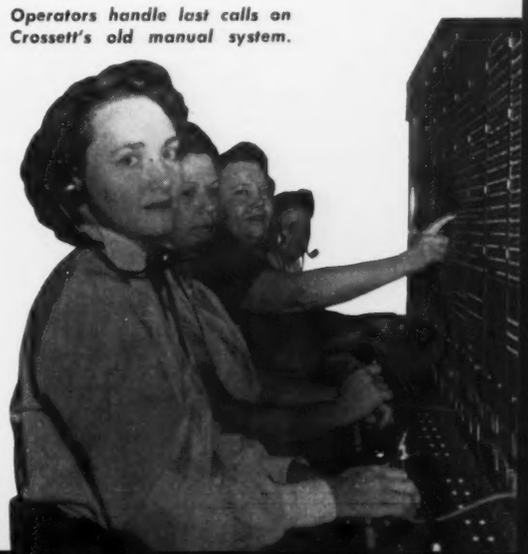
Growing from 3000 population in 1946, the town has now passed the 10,000 mark, and boasts many new industries. It is vigorously planning for the future.

As the town grew, so did the job of Crossett Public Utilities, the independent telephone company serving the town. Manager Jack Tucker sought the finest dial system possible, with provisions for easy expansion in the future. (Some estimates say the town may swell to 25,000 population.)

Assisted by able men like Roscoe Morgan, a graduate of the XY Training School, Mr. Tucker realized his ambitions with the cutover of a new Stromberg-Carlson XY® Dial System, serving the town's 1,950 stations, on November 18, 1954.

You can read the whole story of this surprising town in the November, 1954 issue of *Reader's Digest*, under the title "A Home Town is Born."

Operators handle last calls on Crossett's old manual system.



STROMBERG-CARLSON *transmitter*

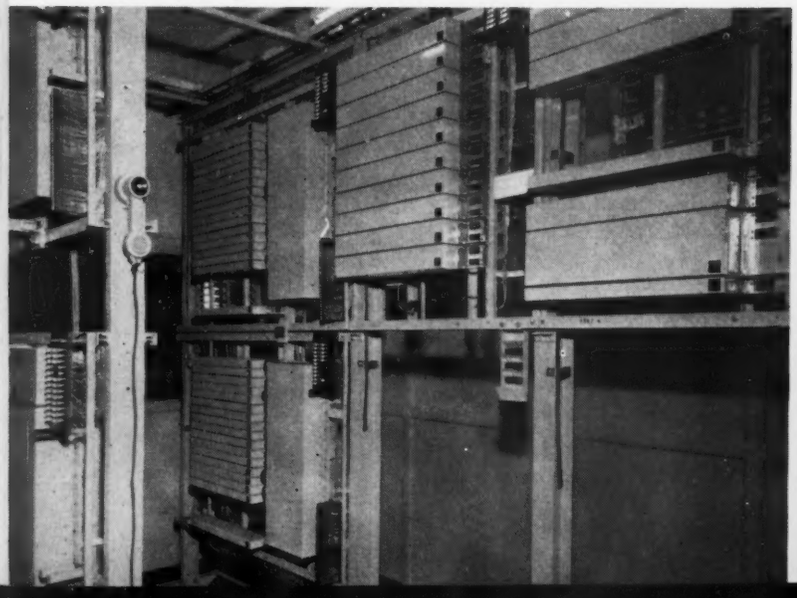
One of Nation's Leading Department Stores Solves Its Communication Problems

Sibley, Lindsay & Curr Company of Rochester, New York, for years recognized as one of the nation's largest and most complete department stores, has achieved its present position through skillful use of all merchandising tools — including fullest possible use of the telephone. Store management has always looked upon the telephone, when properly geared to the requirements of modern retailing, as a most effective — and by far the most economical — mover of goods, especially for a downtown store. The XY® Dial System recently installed is but the latest step in a balanced and progressive program.

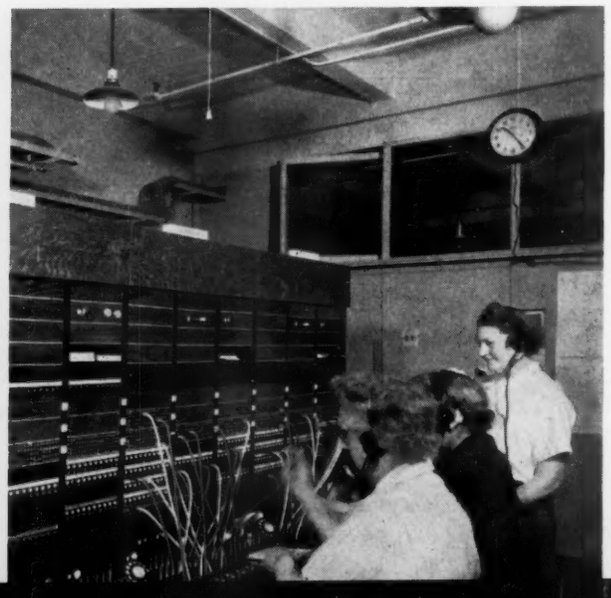
Planning and operation of this vital telephone operation were done with the assistance of Miss Gertrude Larwood, supervisor of communications, who combines with her practical knowledge of telephone operation a college training in retailing.

She has worked enthusiastically with Rochester Telephone Corporation engineers under the direction of William Pitbladdo, to develop a separate yet integrated order department

Part of the 400-line XY dial equipment, showing provision for the expected growth. All internal calls are completed here.



Incoming, information and transfer circuits terminate on attendant's board. Six operators were replaced by three.



STROMBERG-CARLSON transmitter

Volume of the order department is one of the most jealously guarded trade secrets, but it apparently is very high, as additional positions have recently been ordered.

Miss Larwood (standing), Communications Supervisor, chats with an operator. Stromberg-Carlson Multiple Line Key Turrets prove indispensable in buyer's office.

and internal dial system second to none for this type of work.

Each part of the telephone system has its place in the scheme of operation of this huge establishment with its 2,500 employes, now in its 86th year. But in addition, the new XY Dial System and 3-position Stromberg-Carlson attendant's cabinet is tied in to the order department system with ten 2-way transfer trunks so that customers' calls can be readily transferred from one system to the other without inconvenience or lost time (which equals lost sales).

The XY® System has already begun to return real dividends. The number of internal lines was increased and service upgraded while the number of operators was reduced from *five* full time plus a permanent standby to *three* without extra standby. Waiting time has been reduced greatly for both internal and external calls. Peg counts in a recent week indicated 35,000 calls handled entirely through the XY dial equipment and 22,000 through the operators — quantities which would have been beyond imagination with the previous equipment. Miss Larwood, in mentioning that an internal dial system planned for 1941 had been interrupted by the war, felt that in waiting the store has now been given the finest dial system obtainable.

Good luck to you, Ralph Williams

When a ten-year-old boy walked into the Westminster, Md. telephone exchange in 1900 and was put to work as a night operator, we wonder if he ever imagined that a brilliant career was being launched.

On that day 54 years ago, Ralph M. Williams was still a schoolboy. Three years later — at 13 — he was promoted to collector and combination man for the Cumberland Valley Telephone Co. And by the time he was 21, he had become wire chief at Martinsburg, W. Va. for the American Union Telephone Co. At 24, he returned to work for the Cumberland Valley Telephone Co., and stayed with it ever since, while the company grew into today's United Telephone Company of Pennsylvania. He rose to become its plant superintendent.

November of last year, 150 United Tel employes gathered at Boiling Springs, Pa., to honor a retiring executive — Ralph Williams, with 54 years of devotion to telephony. In his own words, "a lot of happy years in the greatest of all industries."

L. R. Thurston, president of the company, praised Mr. Williams for his long, productive career in telephony. We at Stromberg-Carlson join him in wishing you the best of success and good health in your retirement, Mr. Williams.

STROMBERG-CARLSON transmitter

Wisconsin, Oklahoma and Texas Come Briefly Before the XY Exchange Camera

Mondovi, Wisconsin

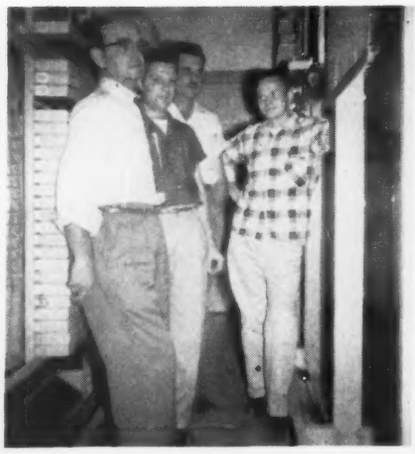
Mr. S. B. Lockwood, president of the Mondovi Telephone Company chose the 50th anniversary of the firm to convert his 1,150 subscribers' telephones to XY dial operation. The

equipment, planned for a future expansion to 1000 lines, will utilize conversation timing to prevent tieing up lines unnecessarily. Mondovi will have free service connections to three neighboring towns whose operators will extend long distance calls.

In the photograph Mr. Stanley Lockwood watches as J. H. Hesselman, treasurer and plant superintendent, checks over his new number assignment sheet.

Maysville, Oklahoma

Portion of the XY equipment recently cut into service here by the Southwestern States Telephone Co. of Brownwood, Texas.



Malakoff, Texas

The Gulf States Telephone Company of Tyler, Texas, added another to its growing list of dial exchanges when a 200-line XY Dial System was recently placed in service at Malakoff, Texas. In the picture above are the four men chiefly responsible for this installation: from the left, Mr. Grady Shirey, district manager of the Athens District; Mr. L. A. Wallace, equipment supervisor; Mr. Donald Lamb, assistant to the General Manager; and Mr. Fred Weaver of Gulf States service and installation department.

The cryptic "As usual, all is well" speaks volumes for the careful planning and execution of details which this company has put into its dial conversion program.

Booklet Can Help You At Cutover Time

Help if you want it! Many companies, preparing for a first dial conversion, may appreciate a helping hand on how best to instruct their subscribers in correct dial procedures. Stromberg-Carlson has prepared a booklet and newspaper feature article along these lines which is readily adaptable to individual requirements. For further information write your editor, George Forbes, at Rochester 3, N. Y.

MEET Howard Squires

Howard Squires, manager of Production Engineering since late 1947, would much prefer to have you look at the photos and story on the facing page which show some of the progressive achievements accomplished under his guidance. That's the way he is.

Howard grew up in Skaneateles, N. Y., and graduated from Syracuse University a mechanical engineer. Jobs were not always exactly of one's choosing in the middle 30's — he started by laying out electrical specifications, heating systems and control panels for a consulting engineer specializing in P.W.A. schools. Through contacts with a Stromberg-Carlson Sound Equipment salesman, he found work in the Industrial Economy Division in Rochester in 1936. He must have enjoyed his work at Stromberg-Carlson for he has grown up with this department, which he now heads.

During World War II Howard's Methods Department tackled the huge task of planning the ARC-21 Project, making air-borne receiving and transmitting equipment for the Navy. After the war he became interested in developing new manufacturing processes — for example the hydrogen annealing process and associated control equipment. Plant layout and improved production methods are now occupying his full attention.

In 1947 Howard married a fellow employe, Helen Thompson; they have two children, Robert, 5, and Betty, 3. Both are active in church and Sunday School. Howard belongs to the Rochester Engineering Society and has been a member of the ASME and the ASM. When time permits he loves to fish and go camping.

STROMBERG-CARLSON *transmitter*

Improved Manufacturing the Goal of Production Engineering

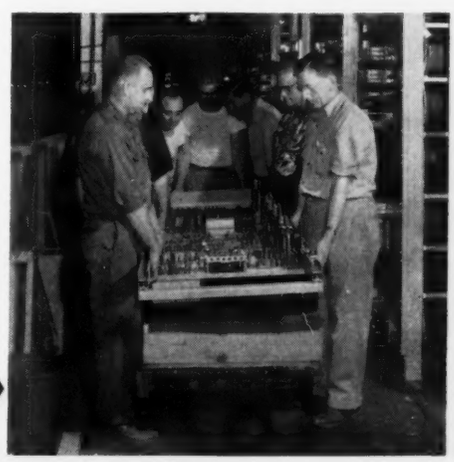
Another in the "New Look" at Stromberg-Carlson series

From earliest times Man has struggled to build better mouse-traps. Manufacturing, to be competitive today, must approach automation wherever this is compatible with highest quality. Work in this field is the major assignment of the Production Engineering Department.

Those readers who have visited the Stromberg-Carlson factory recently have seen the new departmental layouts designed to improve deliveries. This program, necessitated by increased orders for XY Dial Systems and associated telephone equipment, has been under way for several months. Essentially it is a combination of new machines, better layout and adoption of newly-developed techniques.

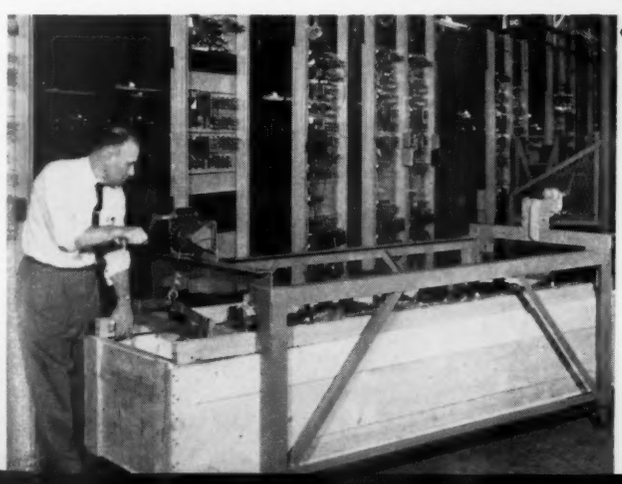
Assisting Howard Squires in this program are many highly qualified specialists: Fred Ciambrone, plant layout; Kenneth Austin, processes; Charles Frey, cost estimating; Mark Chafel, process details and Ted Frankel, test engineering. Frank Smith, cost estimating, has the longest service record — 44 years!

Al Degler (above) of the Production Engineering Department lays out a new department. Many hours of study and planning have gone into such a layout that results in smoother running assembly and manufacturing lines, such as the telephone assembly line shown in the photograph above left.



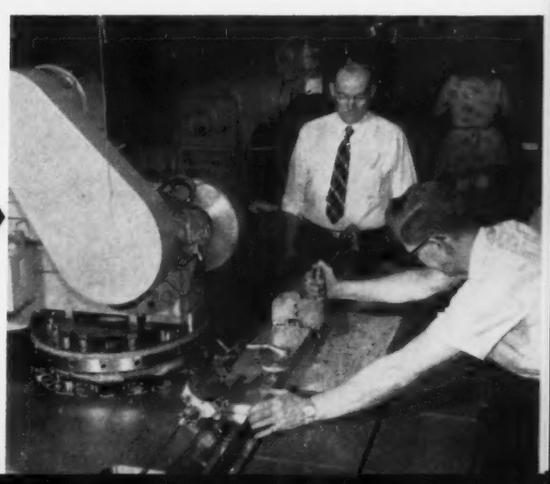
Seven men were needed to pack and crate one Power board section. This method has been replaced with cranes as shown below.

New machines, such as the quenching press above, greatly increase production while lowering the cost of component parts. This press is used to quench and straighten mechanism plates and Tubular Shafts.



Here an overhead hoist is used with a positioning fixture so that one man can pack and crate the Power panels used in XY Dial Systems.

Parts that require many holes of different size are more efficiently handled with the aid of this new turret punch press. R. Gleason, department 37, operates the machine with J. Connors, foreman, looking on during set-up.



STROMBERG-CARLSON *transmitter*

XY Dial Now Serving Florence, Kentucky

When XY dial service was brought to the Florence and Union exchanges of the Consolidated Telephone Company late last year, it was one of the largest conversions to dial operation in northern Kentucky for a good many years, according to Mr. G. B. Foscue, Jr., manager.

An unusual feature of this installation is the automatic transfer of information calls. Subscribers will always dial the same number for information assistance, but such calls will terminate at Florence during the regular working hours only; nights, Sundays and holidays the calls will be switched directly through to the Covington, Kentucky toll center. This procedure makes it much simpler for subscribers.

Rural customers are particularly happy to be able to swap cranking for dialing, and to enjoy the benefits of fully selective ringing.

The fine new building of the Consolidated Telephone Co. appeared in the July issue of the "Transmitter."

L. to r.: Garland (Bud) Foscue, manager; Tom Holmes, installer; Garland B. Foscue, Sr., at new XY® dial equipment in Florence, Kentucky. Grading panel in the foreground.

W. J. Pfaender, manager of Stromberg-Carlson Chicago office, and Roy Brooks, plant superintendent at Consolidated Telephone Company of Florence, Kentucky.

The Men and the Result: Woodburn, Ind.

This smallest CITY in Indiana (pop. 540) now serves nearly 500 patrons through its new XY dial telephone system — a percentage figure which must place it near the top. The change-over to dial came during the 50th anniversary of the telephone in Woodburn.

Toll and information service is by direct trunking to the Bell System at nearby Fort Wayne.

Mr. Charles Roemke is president of the Woodburn Home Telephone Co.; Mr. Eugene Mallar is plant manager.

L. to r.: Eugene E. Mallar, plant superintendent; M. T. Lipsett, manager and secretary; Ezra Shanebeck, director; Paul E. Basting, director, all of Woodburn Home Telephone Co., Inc.; Derward F. Buesching, commercial supervisor for the Home Telephone and Telegraph Co., Fort Wayne, Ind.; E. W. Bohren, vice-president of the Woodburn Company. Seated, making first call: Mayor Edwin F. Keller of Woodburn, Indiana.

Eugene E. Mallar, plant superintendent (with test set), and M. T. Lipsett, manager, with new XY dial equipment at Woodburn.

Published by Stromberg-Carlson . . . makers of Famous XY Equipment

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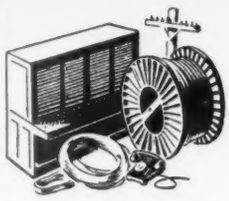

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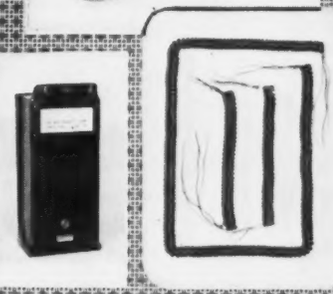

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The Back Of The Book

By JOHN G. REYNOLDS

Old Phone Buried at Steelville

WHEN the *Steelville (Mo.) Telephone Co.* celebrated its recent cutover to dial service, Rev. Harold Renfrow saw to it that the old magneto telephone was properly put to rest. Speaking at the grave of one of the town's "cranking telephones," the minister said: — "Dear Friends: We are gathered here today to pay our last respects (we hope) to our dear departed friend the Old Cranking Phone. He was born about 1903 about the second child of Alexander Graham Bell. He has been seriously ill for better than a year since the arrival of a new child the Steelville Telephone Exchange, Inc. He departed this life Nov. 17, 1954.

"He was a robust person all of his life and with a few minor repairs with wire, string and chewing gum has served his community faithfully and well all of his days.

"He was loved by all who knew him; but just at certain times.

"We shall miss many lovely things about him, such as 'Give me Mr. Brown's home, will you.' 'He is not there; I just saw him go by the office.' 'Ring me Mrs. White's;' 'She does not have a telephone but is over to Mrs. Bell's. Shall I ring there?' When long distance calls are to be made we shall miss, 'Operator, I can't hear a thing;' 'Just a minute please and I will give you the other plug.'

"Also from our memories will have to go, 'You have the wrong number,' 'Oh that stupid operator; I told her whom I wanted.'

"Interred with the remains of this one will go the ability to catch up on the latest gossip with the operator while awaiting the completion of a call. Also the ability to listen on the party line since only your phone will ring.

"We are not very confident of the resurrection of this one from the grave, in fact we hope he is interred forever but we must say earth to earth, ashes to ashes, dust to dust, what the rust won't consume the worms must."

The "Old Cranking Phone" was buried with due ceremony, and the parade, honoring Steelville's new telephone system, passed on down Main Street.

Later, the crowd gathered outside the school building to witness the dynamiting of the old switchboard. We hear it was a grand explosion. Our observer reports — "there was a suspended second between the big blowup and the big noise as the board flew in all directions, and then everything was quiet. The old telephone system was gone forever, replaced by the new and modern dial telephone system which Steelville had wanted for so long . . ."

"Blind But Busy"

IF you have trouble answering one telephone, consider the plight of a blind, Orange, Calif., woman who answers 29 of them — and types out messages on a machine she can't see. For *Bessie Sawyer*, however, it is no trick. She performs her service unerringly and nobody can remember when she made a mistake.

Blind since birth, Miss Sawyer turned to the telephone-answering service 6½ years ago to earn her living. Since she started it — she calls it "The Alert" — she has increased her business to where she now has 29 telephones. Each one has a different bell tone and right there she's having a bit of trouble; it's getting difficult to get telephones with different bell tones.

Soon she plans to convert her complex system to a PBX switchboard, but since she won't be able to see the lights, it will be rigged with bells and buzzers or with buttons which pop out to signal a call.

To Miss Sawyer, whose home is taken over by the answering service she developed, the telephones are at once her companions and her joy. To Bessie each machine has a personality of its own.

She has a variety of clients. Eleven are physicians, another is an oxygen service concern, and still another a taxicab company whose dispatcher doesn't work nights.

Her 24-hour alert is her life — and it has meant life for more than one person because blind *Bessie Sawyer* was there beside the telephones she can't see.

New Roles For Old Poles

IF IT ISN'T one thing, it's another. Bell System & Independent companies have gone all out this year to reduce held orders for main station telephone service. And much progress has been made in that direction. But according to *Northwestern Bell's* magazine the manager of the telephone company in El Centro, Calif., is faced with a new shortage—*not enough old telephone poles.*

In order to receive television programs from the station at Yuma, Ariz., El Centroites need tall aerials. Antennae on tall telephone poles proved to be a neat solution to this problem.

But it was a solution that created a new problem for Manager Rose, and one that threatened to get out of hand. A few "visionaries" even felled poles, ripped them free of the wires they once supported and hauled them away. Other poles were reported missing from stockpiles. Says the manager, "We have a backlog of orders for old poles that will take a year to fill." And it could get worse. Someone may figure out a way to use the old pole holes.

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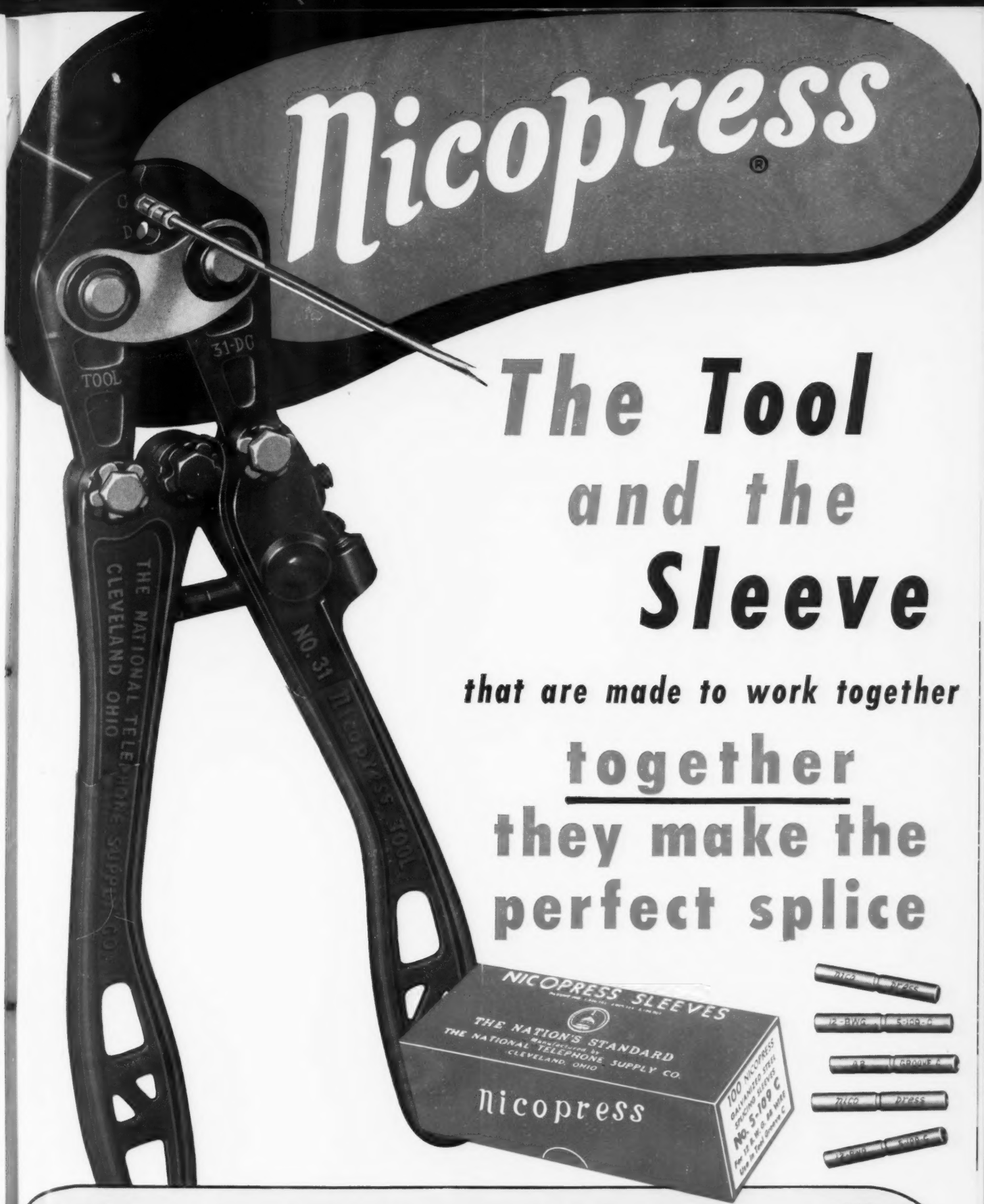

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